Emerson®

Symphonic

SYLVANIA

SERVICE MANUAL

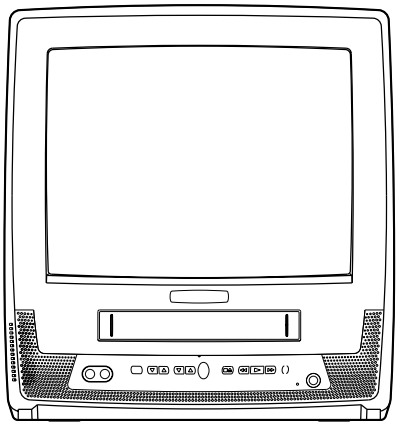
Main Section
- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA's
- Exploded Views
- Parts List

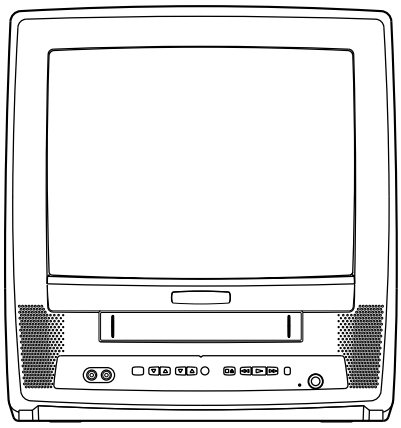
When servicing the deck mechanism, refer to MK12.5 Deck Mechanism Section.

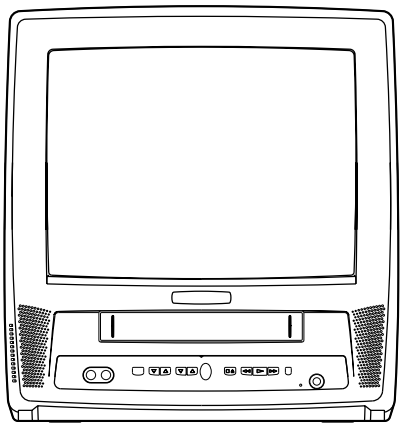
Deck Mechanism Part No.: N2226FT

13" COLOR TV/VCR COMBINATION

EWC1304 **SC313E** **6313CE**







VHS

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not possibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first use all precautions thoroughly so that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

MAIN SECTION

13" COLOR TV/VCR COMBINATION

EWC1304/SC313E/6313CE

Main Section

- **Specifications**
- **Preparation for Servicing**
- **Adjustment Procedures**
- **Schematic Diagrams**
- **CBA's**
- **Exploded Views**
- **Parts List**

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SPECIFICATIONS

✳Mode---------SP mode unless otherwise specified
✳Test input terminal
<Except Tuner>----------Video input (1Vp-p)
Audio input (-10dB)
<Tuner>----------Ant. input (80dBμV) Video: 87.5%
Audio: 25kHz dev (1kHz Sin)

<DEFLECTION>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	—	%	90	±5
2. Linearity	Horizontal	%	—	15
	Vertical	%	—	10
3. High Voltage	—	kV	22	—

<VIDEO & CHROMA>

Description	Condition	Unit	Nominal	Limit
1. Misconvergence	Center	m/m	—	0.3
	Corner	m/m	—	1.5
	Side	m/m	—	1.2
2. Tint Control Range	—	deg	±30	—
3. Contrast Control Range	—	dB	12	8
4. Brightness	APL 100%	ft-L	55	40
5. Color Temperature	—	K	9200	—

<VCR>

Description	Condition	Unit	Nominal	Limit
1. Horizontal Resolution	(R/P)	Line	230	200
2. Jitter (Low)	(R/P)	μS	0.05	0.2
3. S/N Chroma AM(SP)	(R/P)	dB	38	33
PM(SP)	(R/P)	dB	36	33
4. Wow & Flutter (RMS)	(R/P)	%	0.25	0.5

<TUNER>

Description	Condition	Unit	Nominal	Limit
1. Video S/N	—	dB	45	40
2. Audio S/N (W/LPF)	—	dB	43	40

<AUDIO>

All items are measured across 8Ω resistor at speaker output terminal.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power (Max.)	(R/P)	W	1.0	0.8
2. Audio S/N (W/LPF)	(R/P)	dB	40	36
3. Audio Distortion (W/LPF)	(R/P)	%	3.0	5.0
4. Audio Freq. Response (-10dB Ref. 1KHz)	200Hz (R/P) 8kHz (R/P)	dB dB	-2.0 0	-2.0±5.0 0±6.0

Note: Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Safety Precautions for TV Circuit

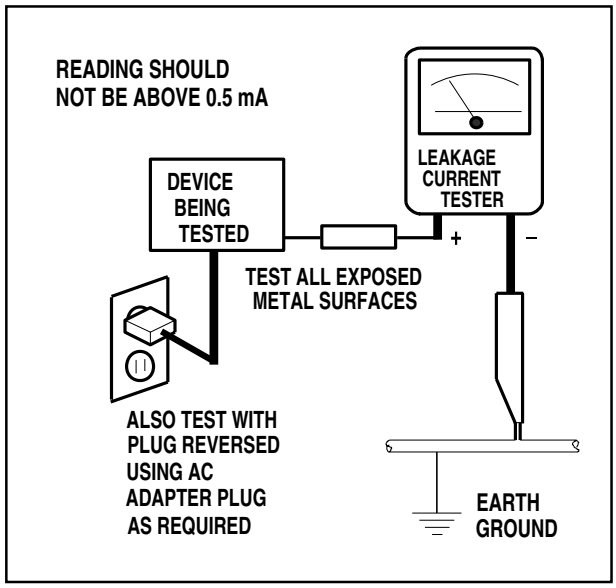
1. **Before returning an instrument to the customer,** always make a safety check of the entire instrument, including, but not limited to, the following items:

a. Be sure that no built-in protective devices are defective and have been defeated during servicing. (1) Protective shields are provided on this chassis to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage.**

b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the picture tube and the cabinet mask, (2) excessively wide cabinet ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet back cover.

c. Antenna Cold Check - With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the on position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each tuner antenna input exposed terminal screw and, if applicable, to the coaxial connector. If the measured resistance is less than 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the off position.

d. Leakage Current Hot Check - With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1410, (50.7). With the instrument AC switch first in the on position and then in the off position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinet, screw heads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milli-ampere. Reverse the instrument power cord plug in the outlet and repeat the test.



ANY MEASUREMENTS NOT WITHIN THE LIMITS SPECIFIED HEREIN INDICATE A POTENTIAL SHOCK HAZARD THAT MUST BE ELIMINATED BEFORE RETURNING THE INSTRUMENT TO THE CUSTOMER OR BEFORE CONNECTING THE ANTENNA OR ACCESSORIES.

e. X-Radiation and High Voltage Limits - Because the picture tube is the primary potential source of X-radiation in solid-state TV receivers, it is specially constructed to prohibit X-radiation emissions. For continued X-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform an X-radiation protection function, they must be correctly in place. High voltage must be measured each time servic-

ing is performed that involves B+, horizontal deflection or high voltage. Correct operation of the X-radiation protection circuits also must be reconfirmed each time they are serviced. (X-radiation protection circuits also may be called "horizontal disable" or "hold down.") Read and apply the high voltage limits and, if the chassis is so equipped, the X-radiation protection circuit specifications given on instrument labels and in the Product Safety & X-Radiation Warning note on the service data chassis schematic. High voltage is maintained within specified limits by close tolerance safety-related components/adjustments in the high-voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic and take corrective action.

2. Read and comply with all caution and safety-related notes on or inside the receiver cabinet, on the receiver chassis, or on the picture tube.
3. **Design Alteration Warning -** Do not alter or add to the mechanical or electrical design of this TV receiver. Design alterations and additions, including, but not limited to circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this receiver and create a hazard to the user. Any design alterations or additions will void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.
4. **Picture Tube Implosion Protection Warning -** The picture tube in this receiver employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do not remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body. Do not handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; because of potential hazard, do not try to remove such "permanently attached" yokes from the picture tube.
5. **Hot Chassis Warning -**

a. Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord and maybe safety-serviced without an isolation transformer only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC power source. To confirm that the AC power plug is inserted correctly, with an AC voltmeter, measure between the chassis and a known earth ground. If a voltage reading in excess of 1.0V is obtained, remove and reinsert the AC power plug in the opposite polarity and again measure the voltage potential between the chassis and a known earth ground.

b. Some TV receiver chassis normally have 85V AC(RMS) between chassis and earth ground regardless of the AC plug polarity. This chassis can be safety-serviced only with an isolation transformer inserted in the power line between the receiver and the AC power source, for both personnel and test equipment protection.

c. Some TV receiver chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulation material that must not be defeated or altered.

6. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: a. near sharp edges, b. near thermally hot parts-be sure that leads and components do not touch thermally hot parts, c. the AC supply, d. high voltage, and e. antenna wiring. Always inspect in all areas for pinched, out of place, or frayed wiring. Check AC power cord for damage.
7. Components, parts, and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts, or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.
8. **Product Safety Notice -** Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc.. Parts that have special safety characteristics are identified by a (⚠) on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are strictly inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the (⚠) symbol are critical for safety.

Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation Tape
2) PVC tubing
3) Spacers
4) Insulators for transistors.

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

G. Check that replaced wires do not contact sharp edged or pointed parts.

H. When a power cord has been replaced, check that 5~6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector

When replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, in order to prevent shock hazards, perform carefully and precisely the following steps.

Replacement procedure

1) Remove the old connector by cutting the wires at a point close to the connector.

   Important: Do not re-use a connector (discard it).

2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
4) Use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the VCR connectors, first, disconnect the AC plug from AC supply socket.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d) (d')
110 to 130 V	USA or CANADA	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

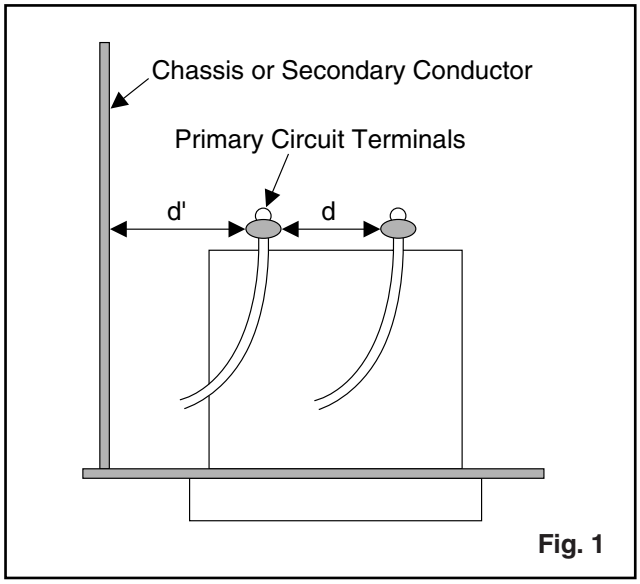


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig. 2 and following table.

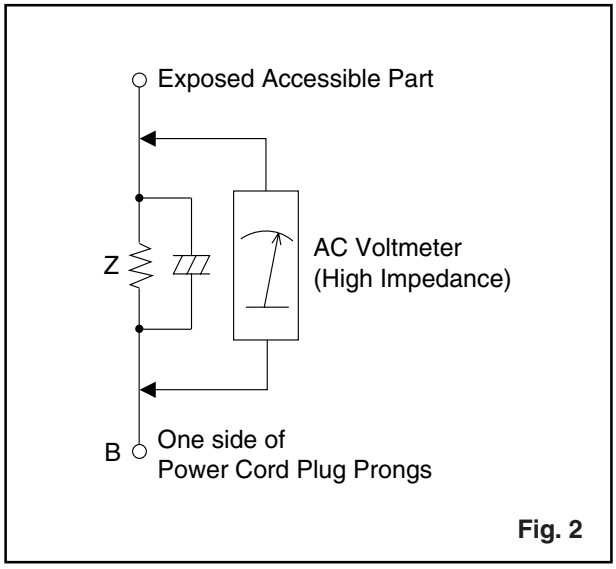


Fig. 2

Table 2 : Leakage current ratings for selected areas

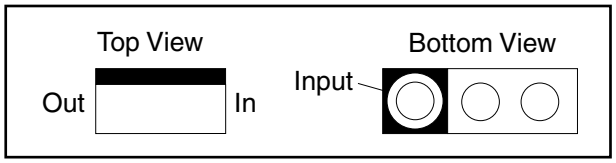
AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA or CANADA	0.15μF CAP. & 1.5kΩ RES. connected in parallel	i≤0.5mA rms	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

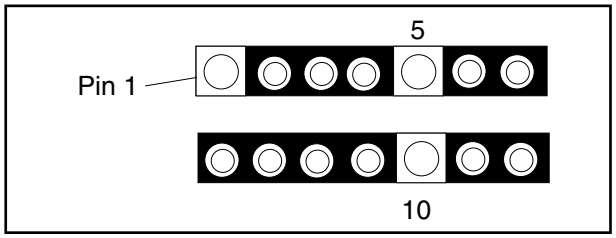
STANDARD NOTES FOR SERVICING

Circuit Board Indications

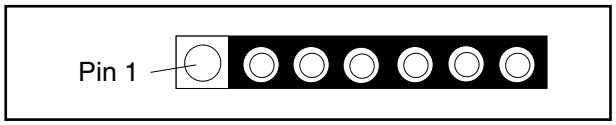
1. The output pin of the 3 pin Regulator ICs is indicated as shown:



2. For other ICs, pin 1 and every 5th pin is indicated as shown:

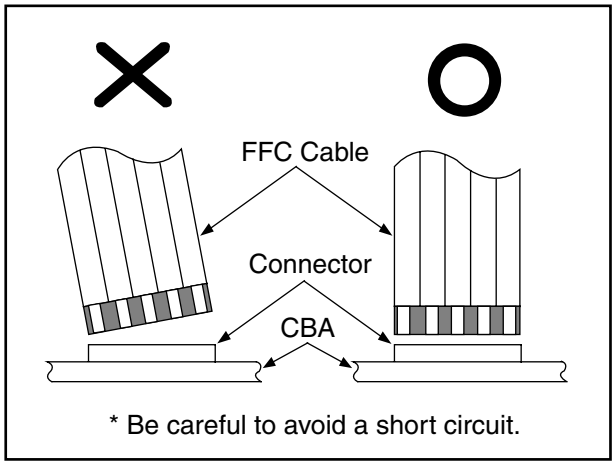


3. The 1st pin of every pin connector are indicated as shown:



Instructions for Connectors

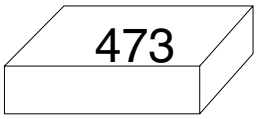
1. When you connect or disconnect FFC cable (connector), be sure to disconnect the AC cord.
2. FFC cable (connector) should be inserted parallel into the connector, not at an angle.



[CBA= Circuit Board Assembly]

How to Read the Values of the Rectangular Type Chip Components

Example:
(a) Resistor



= 473 = 47 [kΩ]

(Top View)

(b) Capacitor

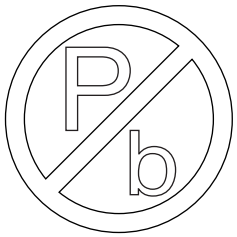
= Not Shown

(Top View)

Caution:
Once chip parts (Resistors, Capacitors, Transistors, etc.) are removed, they must not be reused. Always use a new part.

Pb (Lead) Free Solder

Pb free mark will be found on PCBs used Pb free solder. (Refer to figure.) For PCBs with Pb free mark, be sure to use Pb free solder. For PCBs without Pb free mark, use standard solder.



Pb free mark

Replacement Procedures for Leadless (Chip) Components

The Following Procedures are Recommended for the Replacement of the Leadless Components Used in this Unit.

1. Preparation for replacement

a. Soldering Iron
Use a pencil-type soldering iron (less than 30 watts).

b. Solder
Eutectic solder (Tin 63%, Lead 37%) is recommended.

c. Soldering time
Do not apply heat for more than 4 seconds.

d. Preheating
Leadless capacitor must be preheated before installation. (130°C~150°C, for about two minutes.)

Notes:

a. Leadless components must not be reused after removal.

b. Excessive mechanical stress and rubbing for the component electrode must be avoided.

2. Removing the leadless component

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes has melted, remove leadless component with a twisting motion.

Notes:

a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by the twisting action.

b. Take care not to break the copper foil on the printed board

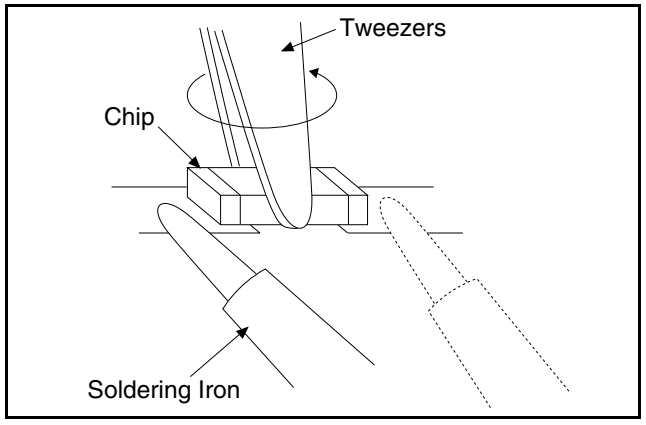
3. Installing the leadless component

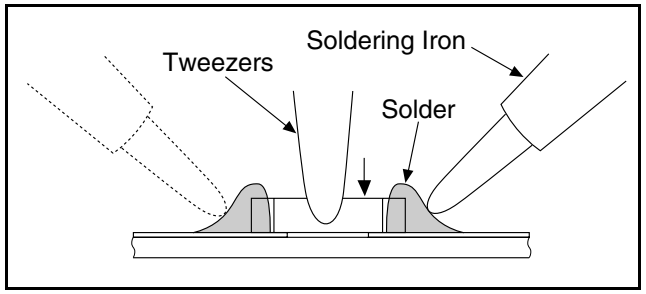
a. Presolder the contact points of the circuit board.

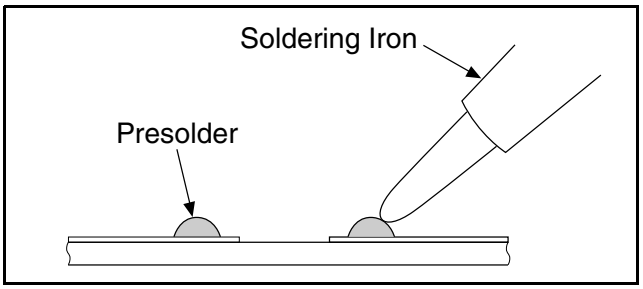
b. Press the part downward with tweezers and solder both electrodes as shown below.

Note:

Do not glue the replacement leadless component to the circuit board.







How to Remove / Install Flat Pack IC

Caution:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not apply the hot air to the chip parts around the Flat Pack-IC for over 6 seconds as damage may occur to the chip parts. Put Masking Tape around the Flat Pack-IC to protect other parts from damage. (Fig. S-1-2)
3. The Flat Pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or solder lands under the IC when removing it.

1. Removal

With Hot - Air Flat Pack - IC Desoldering Machine:

a. Prepare the Hot - Air Flat Pack - IC Desoldering Machine, then apply hot air to Flat Pack - IC (about 5~6 seconds). (Fig. S-1-1)

b. Remove the Flat Pack- IC with tweezers while applying the hot air.

With Soldering Iron:

a. Using desoldering braid, remove the solder from all pins of the Flat Pack - IC. When you use solder flux which is applied to all pins of the Flat Pack - IC, you can remove it easily. (Fig. S-1-3)

b. Lift each lead of the Flat Pack - IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air Desoldering Machine. (Fig. S-1-4)

With Iron Wire:

a. Using desoldering braid, remove the solder from all pins of the Flat Pack - IC. When you use solder flux which is applied to all pins of the Flat Pack - IC, you can remove it easily. (Fig. S-1-3)

b. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

c. Pull up on the wire as the solder melts so as to lift the IC leads from the CBA contact pads, while heating the pins using a fine tip soldering iron or hot air blower.

Note:

When using a soldering iron, care must be taken to ensure that the Flat Pack - IC is not being held by glue, or when it is removed from the CBA, it may be damaged if force is used.

2. Installation

a. Using desoldering braid, remove the solder from the foil of each pin of the Flat Pack - IC on the CBA, so you can install a replacement Flat Pack - IC more easily.

b. The "●" mark on the Flat Pack - IC indicates pin 1 (See Fig. S-1-6). Make sure this mark matches the 1 on the CBA when positioning for installation. Then pre - solder the four corners of the Flat Pack-IC (See Fig. S-1-7).

c. Solder all pins of the Flat Pack - IC. Make sure that none of the pins have solder bridges.

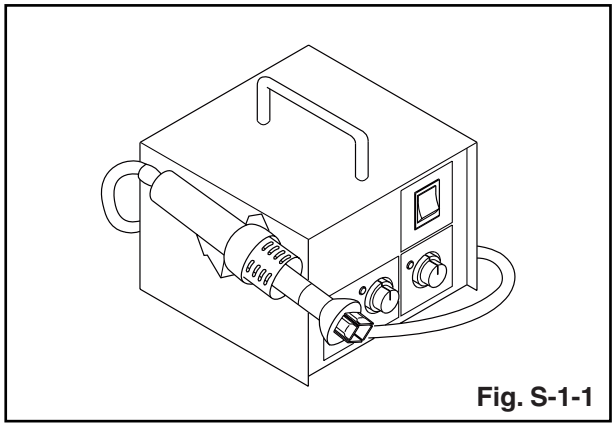


Fig. S-1-1

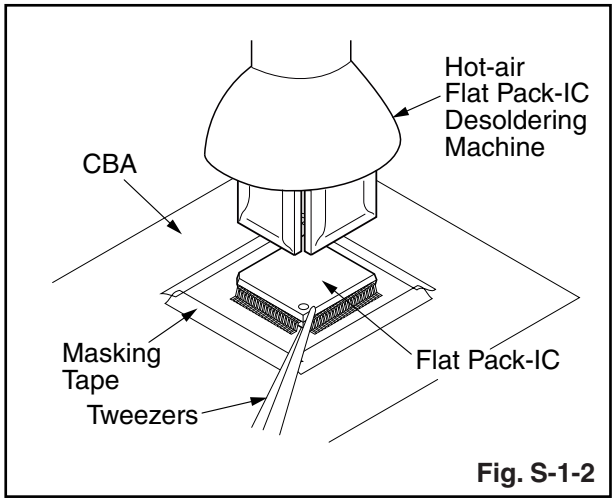


Fig. S-1-2

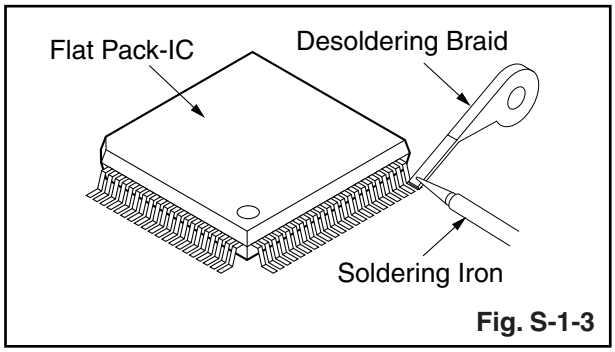


Fig. S-1-3

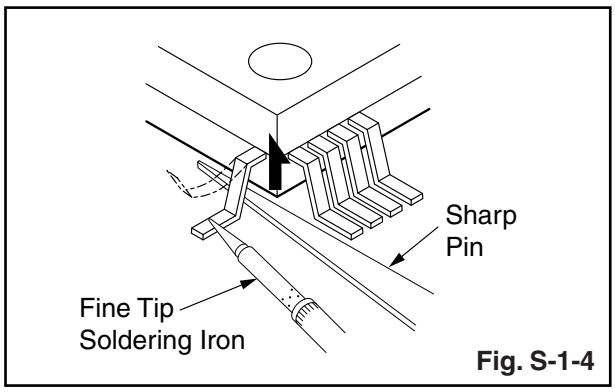


Fig. S-1-4

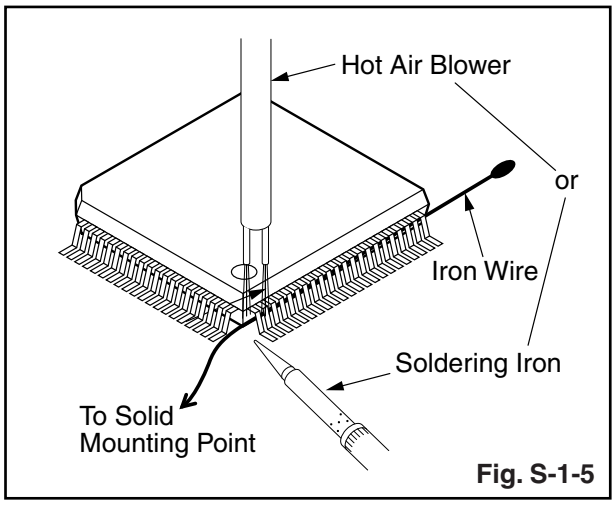
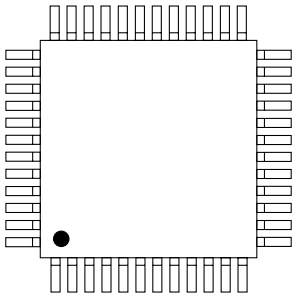


Fig. S-1-5

Example :



Pin 1 of the Flat Pack-IC
is indicated by a " ● " mark.

Fig. S-1-6

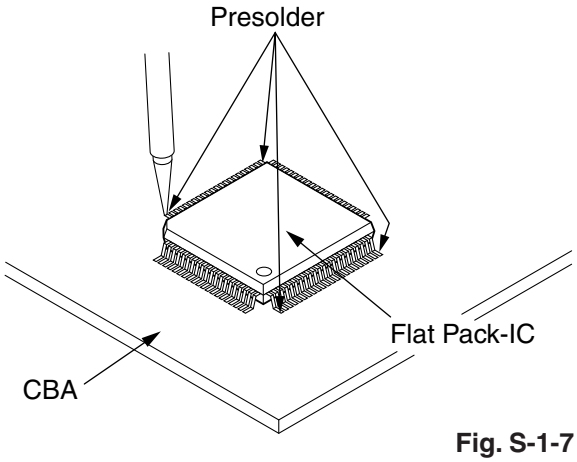


Fig. S-1-7

Instructions for Handling Semiconductors

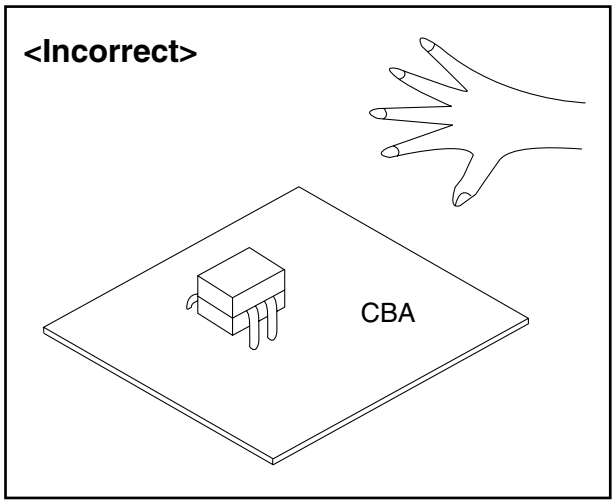
Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

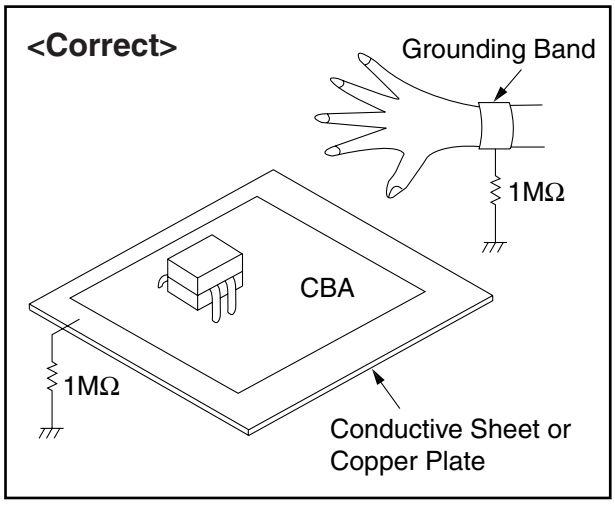
Ground for Human Body

Be sure to wear a grounding band (1MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

Ground for Work Bench

Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the work bench or other surface, where the semiconductors are to be placed. Because the static electricity charge on the clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors to clothing.





PREPARATION FOR SERVICING

How to Enter the Service Mode

Caution: 1

1. Optical sensors system are used for Tape Start and End Sensor on this equipment. Read this page carefully and prepare as described on this page before starting to service; otherwise, the unit may operate unexpectedly.

Preparing: 1

1. Cover Q202 (START SENSOR) and Q201 (END SENSOR) with Insulation Tape or enter the service mode to activate Sensor Inhibition automatically.

Note: Avoid playing, rewinding or fast forwarding the tape to its beginning or end, because both Tape End Sensors are not active.

How to Enter the Service Mode

1. Turn power on.
2. Use service remote control unit and press WAKE-UP/SLEEP key. (See page 1-6-1)
3. When entering the service mode, one of the number (1, 2 or 4) will display at corners of the screen.
4. During the service mode, electrical adjustment mode can be selected by remote control key (service remote control unit).

   Details are as follows.

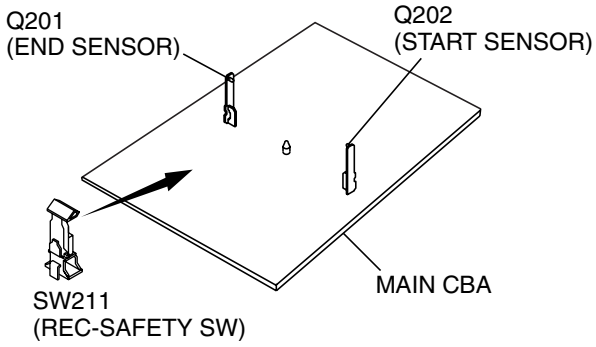
Key	Adjustment Mode
MENU	Picture adjustment mode: Press the MENU button to change from BRT (Bright), *CNT (Contrast), *COL (Color), *TNT(Tint) and *V-T. Press CH UP/ DOWN key to display Initial Value. *Marked items are not necessary to adjust normally.
0	C-Trap and Y DL Time TV/Y DL Time EXT/Y SW LPF/Black Stretch Off/ Black Stretch CONT/C. Angle adjustment mode: See adjustment instructions page 1-6-2 and 1-6-3.
1	No need to use.
2	H adjustment mode: See adjustment instructions page 1-6-2.
3	No need to use.
4	Auto record mode: Perform recording (15 Sec.)-->Stop-->Rewind (Zero return) automatically.
5	Head switching point adjustment mode: See adjustment instructions page 1-6-6.
6	No need to use.
7	Purity check mode: Shows Red, Green, Blue or White cyclically on the screen each time the "7" key is pressed.
8	H. Shift adjustment mode: See adjustment instructions page 1-6-4.
9	V.size/V. shift adjustment: See adjustment instructions page 1-6-4.
VOL ▼	Initial Setting mode: See adjustment instructions page 1-6-1. Cut-off Adjustment mode: See adjustment instructions page 1-6-4.

Caution: 2

1. The deck mechanism assembly is mounted on the Main CBA directly, and SW211 (REC-SAFETY SW) is mounted on the Main CBA. When deck mechanism assembly is removed from the Main CBA due to servicing, this switch can not be operated automatically.

Preparing: 2

1. To eject the tape, press the STOP/EJECT button on the unit (or Remote Control).
2. When you want to record during the Service mode, press the Rec button while depressing SW211 (REC-SAFETY SW) on the Main CBA.



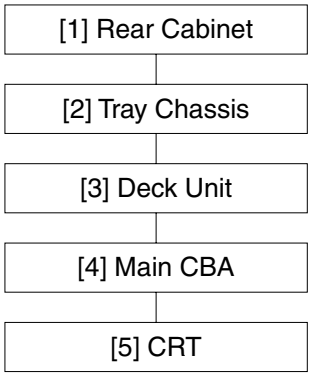
CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps for the cabinet parts and the CBA in order to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route and dress the cables as they were.

Caution !

When removing the CRT, be sure to discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.



2. Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	Note
[1]	Rear Cabinet	1, 2	4(S-1), (S-2)	1
[2]	Tray Chassis	3, 5	Anode Cap, CN505, CRT CBA, CN601, CN801, CN571	2
[3]	Deck Unit	3, 5	7(S-3), (S-4), (S-5), Desolder (CL201, CL401, CL402, CL403)	3
[4]	Main CBA	3, 5	5(S-6), (S-7)	4
[5]	CRT	4	4(S-8)	5
↓ (1)	↓ (2)	↓ (3)	↓ (4)	↓ (5)

(1): Order of steps in Procedure. When reassembling, follow the steps in reverse order. These numbers are also used as the Identification (location) No. of parts in Figures.

(2): Parts to be removed or installed.

(3): Fig. No. showing Procedure of Part Location.

(4): Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
S=Screw, P=Spring, L=Locking Tab, CN=Connector, *=Unhook, Unlock, Release, Unplug, or Desolder
2(S-2) = two screws (S-2)

(5): Refer to the following Reference Notes in the Table.

Reference Notes in the Table

1. Removal of the Rear Cabinet.
   Remove screws 4(S-1) and (S-2).

Caution !

Discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

2. Removal of the Tray Chassis.
   Discharge the Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap. Disconnect the following: Anode Cap, CN505, CRT CBA, CN601, CN571 and CN801. Then, pull the Tray Chassis backward.
3. Removal of the Deck Unit.
   Remove screws 7(S-3), (S-4) and (S-5). Then, desolder connectors (CL201, CL401, CL402, CL403) and lift up the Deck Unit.
4. Removal of the Main CBA.
   Remove screws 5(S-6) and (S-7). Then, pull up the Main CBA.
5. Removal of the CRT.
   Remove screws 4(S-8) and pull the CRT backward.

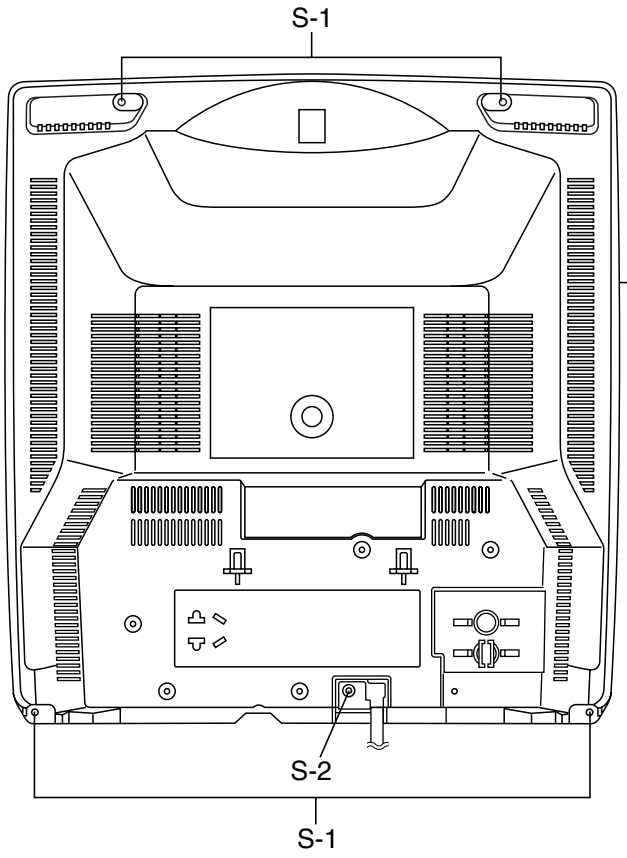


Fig. 1

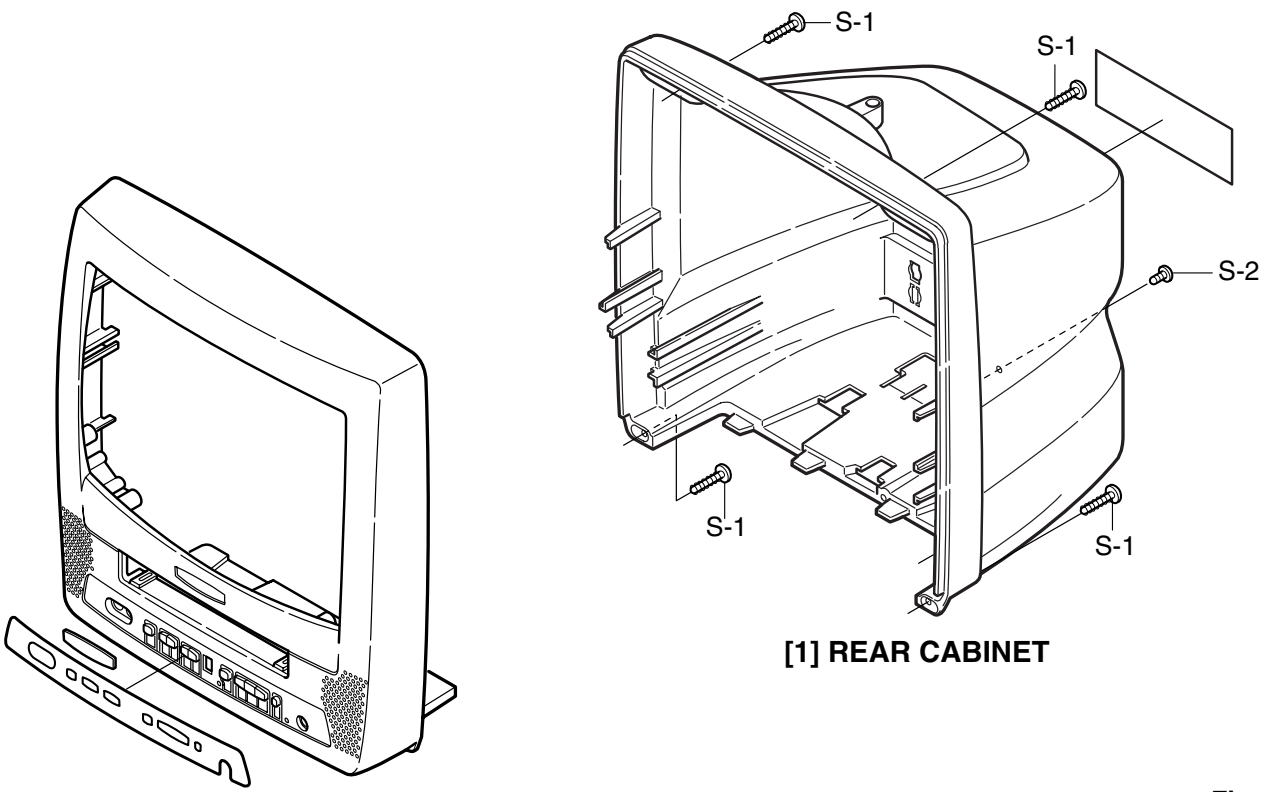


Fig. 2

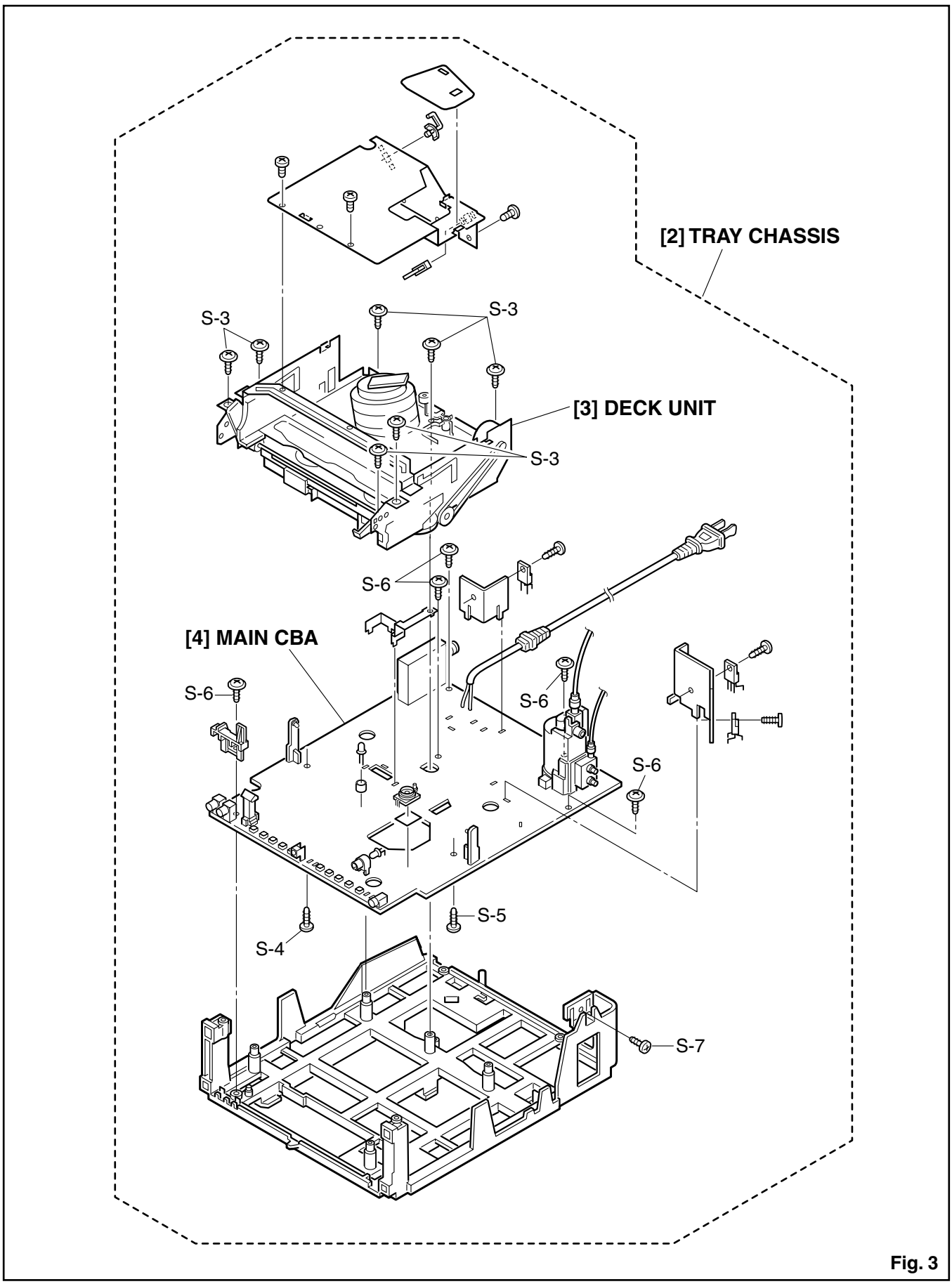


Fig. 3

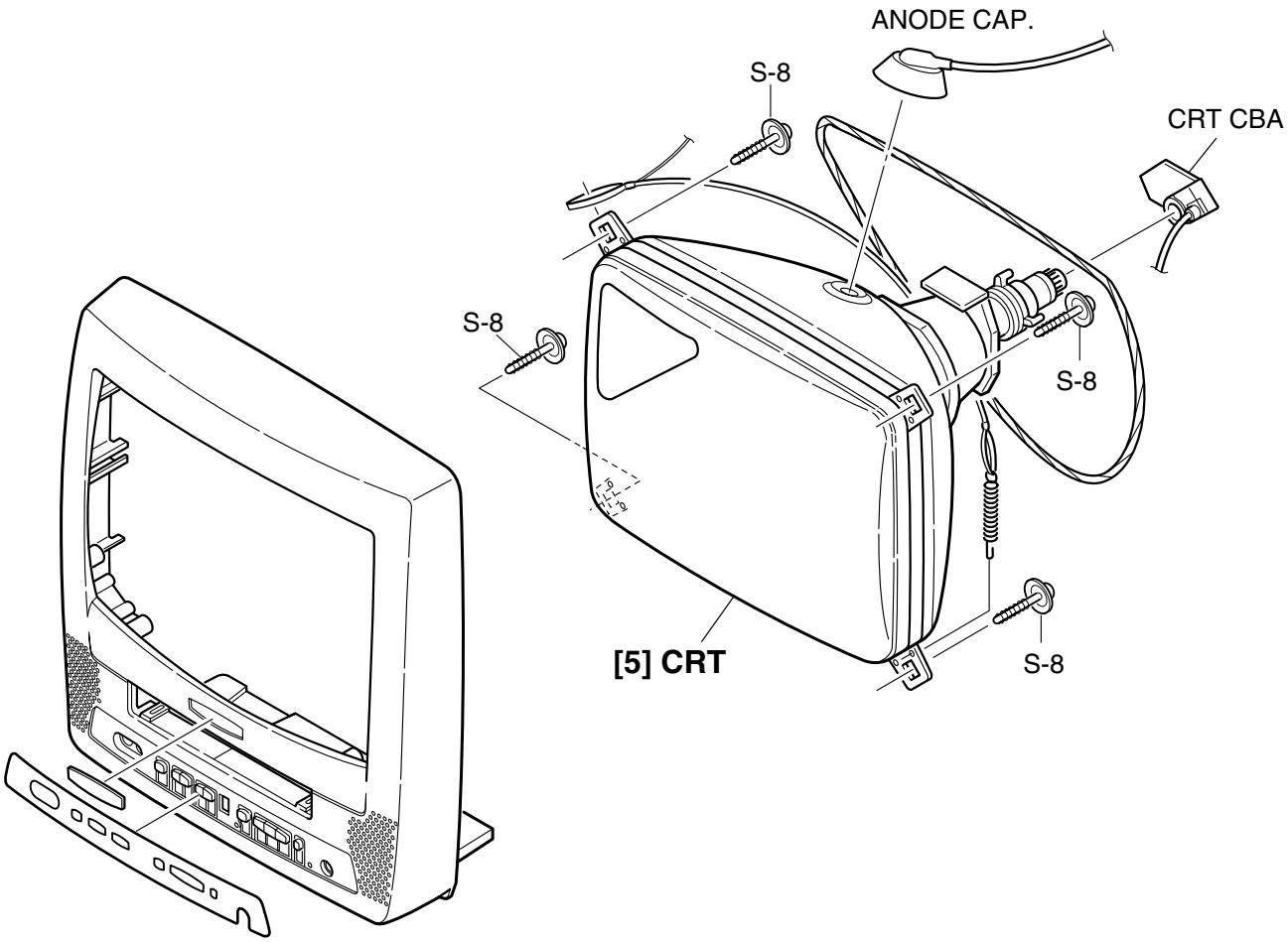


Fig. 4

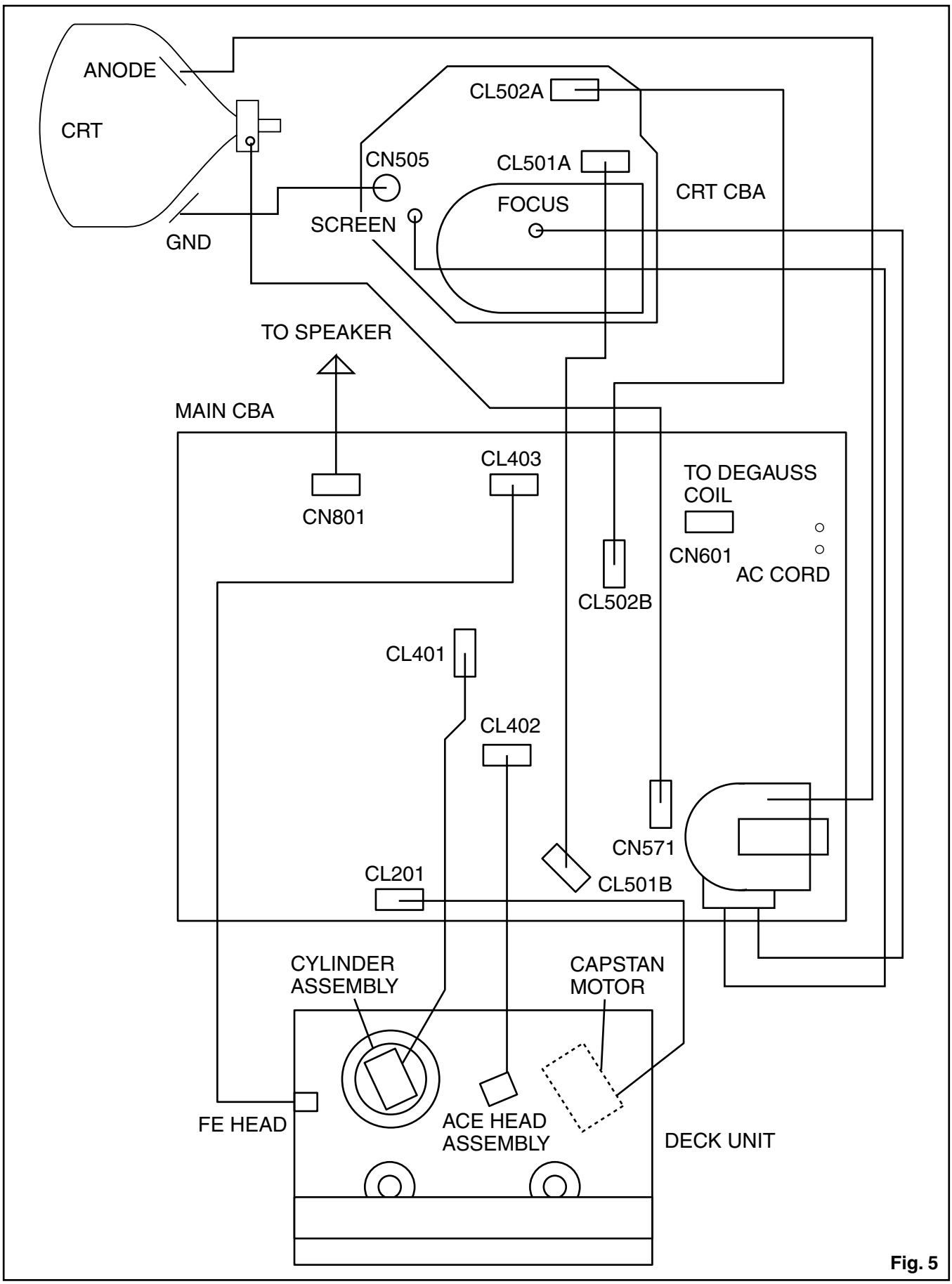

ANODE
CRT
GND
CN505
SCREEN
CL502A
CL501A
FOCUS
CRT CBA
TO SPEAKER
MAIN CBA
CN801
CL403
TO DEGAUSS COIL
CN601
AC CORD
CL502B
CL401
CL402
CN571
CL201
CL501B
CYLINDER ASSEMBLY
CAPSTAN MOTOR
FE HEAD
ACE HEAD ASSEMBLY
DECK UNIT

Fig. 5

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note:

"CBA" is abbreviation for "Circuit Board Assembly."

NOTE:

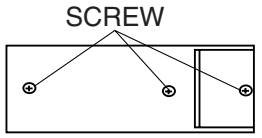
Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed.
Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. NTSC Pattern Generator (Color Bar W/White Window, Red Color, Dot Pattern, Gray Scale, Monoscope, Multi-Burst)
2. AC Milli Voltmeter (RMS)
3. Alignment Tape (FL8A, FL8N), Blank Tape
4. DC Voltmeter
5. Oscilloscope: Dual-trace with 10:1 probe,
   V-Range: 0.001~50V/Div,
   F-Range: DC~AC-60MHz
6. Frequency Counter
7. Plastic Tip Driver

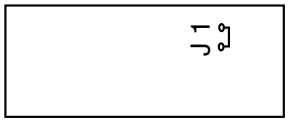
How to make service remote control unit:

1. Prepare remote control unit. (Part No. N0107UD or N0150UD) Remove 3 screws from the back lid. (Fig. 1-1)



Remote control unit (Bottom) **Fig. 1-1**

2. Remote control unit: Part No. N0107UD
   Add J1 (Jumper Wire) to the remote control CBA. (Fig. 1-2)



Remote control CBA **Fig. 1-2**

Remote control unit: Part No. N0150UD
Cut off pin 10 of the remote control microprocessor and short circuit pins 10 and 17 of the microprocessor with a jumper wire.

Note: The remote control with the unit cannot be used as service remote control unit.

How to Set up the Service mode:

Service mode:

1. Use the service remote control unit.
2. Turn the power on.
3. Press "WAKE-UP/SLEEP" button on the service remote control unit.

1. DC 105V (+B) Adjustment

Purpose: To obtain correct operation.

Symptom of Misadjustment: The picture is dark and unit does not operate correctly.

Test point	Adj. Point	Mode	Input
D613 Cathode (+B) C613(-) (GND)	VR601	---	-----
Tape	M. EQ.	Spec.	
---	DC Voltmeter Plastic Tip Driver	+105±0.5V DC	

Note: D613 Cathode (+B), C613(-) (GND), VR601 --- Main CBA

1. Connect the unit to AC Power Outlet.
2. Connect DC Volt Meter to D613 Cathode (+B) and C613(-) (GND).
3. Adjust VR601 so that the voltage of D613 Cathode (+B) becomes +105±0.5V DC.

2. Initial Setting

General

1. Enter the Service mode. (See page 1-4-1)
2. Press "VOL ▼" button on the service remote control unit. Display changes "C/D," "7F," "FM," "ACCESS CODE," "9V," and "RC5" cyclically when "VOL ▼" button is pressed.
3. To set each data value shown below, press "CH ▲ / ▼" buttons on the service remote control unit.

   7F --- Set to "FF."

   FM --- Set to "OFF."

   ACCESS CODE --- Set to "OFF."

   9V --- Set to "OFF."

   RC5 --- Set to "OFF."

Note: **C/D** data value does not need to be adjusted at this moment.

3-1. H Adjustment

Purpose: To get correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test point	Adj. Point	Mode	Input
R583	CH ▲ / ▼ buttons	Video	---
Tape	M. EQ.	Spec.	
---	Frequency Counter	15.734kHz±300Hz	

Note: R583 --- Main CBA

1. Connect Frequency Counter to R583.
2. Set the unit to the VIDEO mode and no input is necessary. Enter the Service mode. (See page 1-4-1.)
3. Operate the unit for at least 20 minutes.
4. Press "2" button on the remote control unit and select H-Adj mode. (Press "2" button, then display will change H-Adj and AGC.)
5. Press "CH ▲ / ▼" buttons on the remote control unit so that the display will change "0" to "7." At this moment, choose display "0" to "7" when the Frequency counter display is closest to 15.734kHz±300Hz.
6. Turn the power off and on again.

3-2. C-Trap Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If C-Trap Adjustment is incorrect, stripes will appear on the screen.

Test point	Adj. Point	Mode	Input
J271 (B-OUT)	CH ▲ / ▼ buttons	---	Color Bar
Tape	M. EQ.	Spec.	
---	Oscilloscope Pattern Generator	---	

Figure

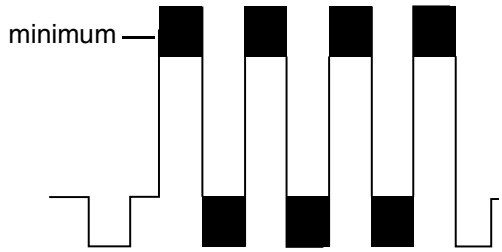


Fig. 2

Note: J271 (B-Out)--- Main CBA

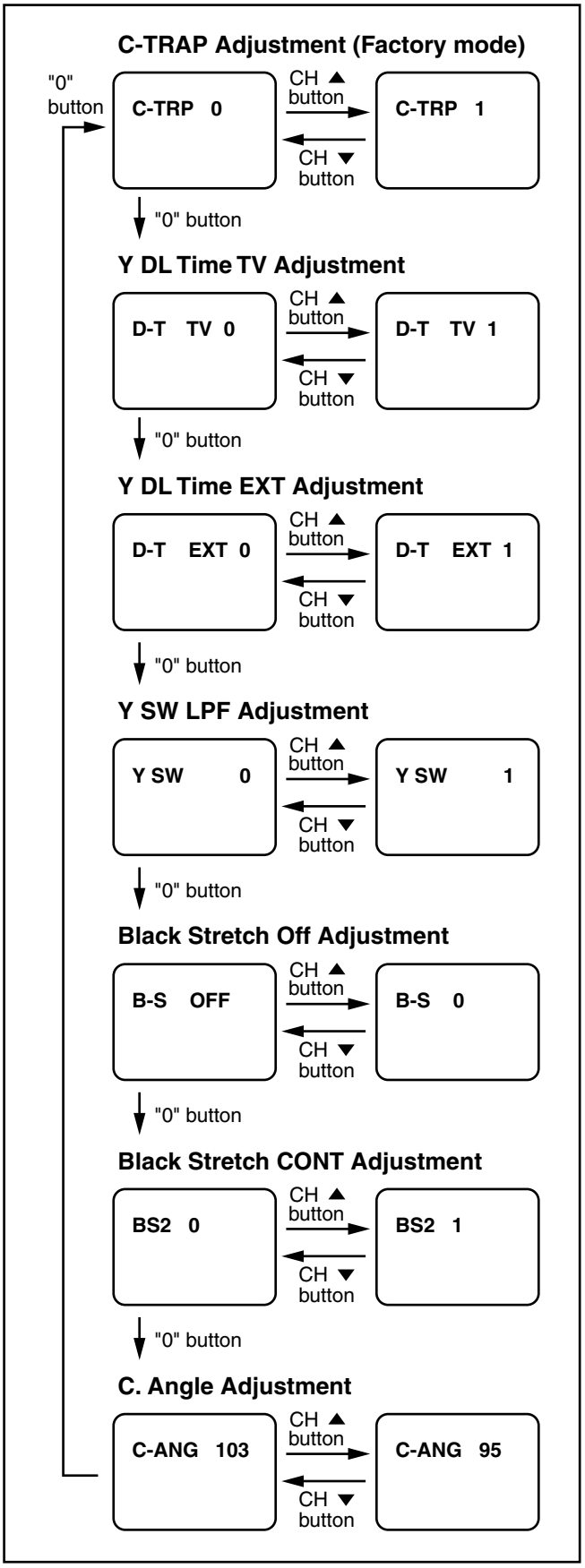
1. Connect Oscilloscope to J271.
2. Input a color bar signal from RF input. Enter the Service mode. (See page 1-4-1.)
3. Press "0" button on the remote control unit and select C-TRAP mode.
4. Press "CH ▲ / ▼" buttons on the remote control unit so that the carrier leakage B-Out (3.58MHz) value becomes minimum on the oscilloscope.
5. Turn the power off and on again.

3-3. Y DL Time TV/Y DL Time EXT/ Y SW LPF/Black Stretch Off/ Black Stretch CONT/C. Angle Adjustment

Purpose: To get minimum leakage of the color signal carrier.

Symptom of Misadjustment: If Y DL Time Adjustment is incorrect, stripes will appear on the screen.

1. Enter the Service mode. (See page 1-4-1.)
2. **Y DL Time TV Adjustment:** Press "0" button on the service remote control unit twice to show "D-T TV" on the display.
   Y DL Time EXT Adjustment: Press "0" button on the service remote control unit three times to show "D-T EXT" on the display.
   Y SW LPF Adjustment: Press "0" button on the service remote control unit four times to show "Y SW" on the display.
   Black Stretch Off Adjustment: Press "0" button on the service remote control unit five times to show "B-S" on the display.
   Black Stretch CONT Adjustment: Press "0" button on the service remote control unit six times to show "BS2" on the display.
   C. Angle Adjustment: Press "0" button on the service remote control unit seven times to show "C-ANG" on the display.
3. **Y DL Time TV Adjustment:** Select "2" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Y DL Time EXT Adjustment: Select "2" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Y SW LPF Adjustment: Select "1" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Black Stretch Off Adjustment: Select "OFF" by pressing "CH ▲ / ▼" buttons on the service remote control.
   Black Stretch CONT Adjustment: Select "0" by pressing "CH ▲ / ▼" buttons on the service remote control.
   C. Angle Adjustment: Select "103" by pressing "CH ▲ / ▼" buttons on the service remote control.



4. V. Size Adjustment

Purpose: To obtain correct vertical height of screen image.

Symptom of Misadjustment: If V. Size is incorrect, vertical height of image on the screen may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	---	Monoscope
Tape	M. EQ.	Spec.	
---	Pattern Generator	90±5%	

1. Enter the Service mode. (See page 1-4-1.)
   Press "9" button on the remote control unit and select V-S mode. (Press "9" button then display will change to V-P and V-S).
2. Input monoscope pattern.
3. Press "CH ▲ / ▼" buttons on the remote control unit so that the monoscope pattern is 90±5% of display size and the circle is round.

5. V. Shift Adjustment

Purpose: To obtain correct vertical position of screen image.

Symptom of Misadjustment: If V. position is incorrect, vertical position of image on the screen may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	---	Monoscope
Tape	M. EQ.	Spec.	
---	Pattern Generator	90±5%	

1. Enter the Service mode. (See page 1-4-1.)
   Press "9" button on the remote control unit and select V-P mode. (Press "9" button then display will change to V-P and V-S).
2. Input monoscope pattern.
3. Press "CH ▲ / ▼" buttons on the remote control unit so that the top and bottom of the monoscope pattern are equal to each other.

6. H. Shift Adjustment

Purpose: To obtain correct horizontal position and size of screen image.

Symptom of Misadjustment: Horizontal position and size of screen image may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	---	Monoscope
Tape	M. EQ.	Spec.	
---	Pattern Generator	90±5%	

1. Enter the Service mode. (See page 1-4-1.)
   Press "8" button on the remote control unit and select H-P mode.
2. Input monoscope pattern.
3. Press "CH ▲ / ▼" buttons on the remote control unit so that the left and right side of the monoscope pattern are equal to each other.
4. Turn the power off and on again.

7. Cut-off Adjustment

Purpose: To adjust the beam current of R, G, B, and screen voltage.

Symptom of Misadjustment: White color may be reddish, greenish or bluish.

Test point	Adj. Point	Mode	Input
---	Screen-Control	Ext.	Black Raster / White Raster
Tape	M. EQ.	Spec.	
---	Pattern Generator	See Reference Notes below	

Figure

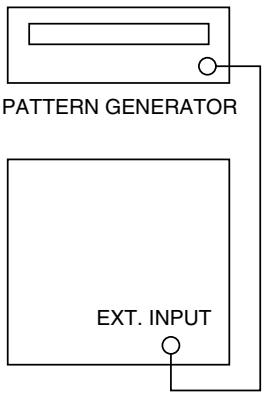


Fig. 3

Notes: Screen Control FBT --- MAIN CBA
F.B.T= Fly Back Transformer
Use the Remote Control Unit

1. Degauss the CRT and allow CRT to operate for 20 minutes before starting the alignment.
2. Set the screen control to minimum position. Input the Black raster signal from RF input.
3. Enter the Service mode. (See page 1-4-1.)
   Dimmed horizontal line appears on the CRT.
4. Press the "VOL ▼" button.
   (Press "VOL ▼" then display will change CUT OFF/ DRIVE adjustment).
5. Choose CUT OFF/DRIVE mode then press "1" button. This adjustment mode is CUT OFF (R).
6. Press the "CH ▲ / ▼" button until the horizontal line becomes white.
7. Choose CUT OFF/DRIVE mode then press "2" button. This adjustment mode is CUT OFF (G). Press "CH ▲ / ▼" until the horizontal line becomes white.
8. Choose CUT OFF/DRIVE mode then press "3" button. This adjustment mode is CUT OFF (B). Press "CH ▲ / ▼" until the horizontal line becomes white.
9. Input the White Raster Signal from Video In.
10. Choose CUT OFF/DRIVE mode then press "4." Adjust the RED DRIVE as needed with the "CH ▲ / ▼" buttons to get the following value, X= 286, Y= 294.
11. Choose CUT OFF/DRIVE mode then press "5." Adjust the BLUE DRIVE as needed with the "CH ▲ / ▼" buttons to get the following value, X= 286.
12. Turn the power off and on again.

8. Sub-Brightness Adjustment

Purpose: To get proper brightness.

Symptom of Misadjustment: If Sub-Brightness is incorrect, proper brightness cannot be obtained by adjusting the Brightness Control.

Test point	Adj. Point	Mode	Input
---	CH ▲ / ▼ buttons	---	SYMPTE 7.5IRE
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below	

Figure

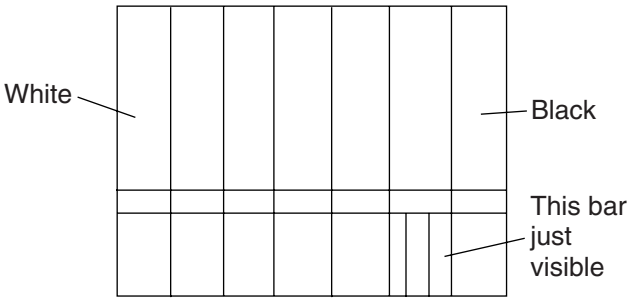


Fig. 4

Note: SYMPTE Setup level --- 7 IRE

1. Enter the Service mode. (See page 1-4-1.)
   Then input SYMPTE signal from RF input.
2. Press MENU button. (Press MENU button then display will change BRT, CNT, COL, TNT and V-T). Select BRT and press "CH ▲ / ▼" buttons so that the bar is just visible (See above figure).
3. Turn the power off and on again.

9. Focus Adjustment

Purpose: Set the optimum Focus.

Symptom of Misadjustment: If Focus Adjustment is incorrect, blurred images are shown on the display.

Test point	Adj. Point	Mode	Input
---	Focus Control	---	Monoscope
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below.	

Note: Focus VR (FBT) --- MAIN CBA

FBT= Fly Back Transformer

1. Operate the unit more than 30 minutes.
2. Face the unit to the East and degauss the CRT using a Degaussing Coil.
3. Input the monoscope pattern.
4. Adjust the Focus Control on the FBT to obtain clear picture.

10. Head Switching Position Adjustment

Purpose: Determine the Head Switching Point during Playback.

Symptom of Misadjustment: May cause Head Switching Noise or Vertical Jitter in the picture.

Note: Unit reads Head Switching Position automatically and displays it on the screen (Upper Left Corner).

1. Insert the test tape (FL8A, FL8N).
2. Set the unit to the stop condition.
3. Enter the Service mode. (See page 1-4-1.)
4. Press "PAUSE" button on the remote control unit.
5. Confirm that indication of OSD is 6.5H.

11. CCS Text Box Location

When replacing the CRT, the CCS Box might not stay in appropriate position. Then, replace micro computer.

Note: This adjustment automatically done by the microcomputer.

The following 2 adjustments normally are not attempted in the field. They should be done only when replacing the CRT then adjust as a preparation.

12.Purity Adjustment

Purpose: To obtain pure color.

Symptom of Misadjustment: If Color Purity Adjustment is incorrect, large areas of color may not be properly displayed.

Test point	Adj. Point	Mode	Input
---	Deflection Yoke Purity Magnet	---	*Red Color
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below.	

Figure

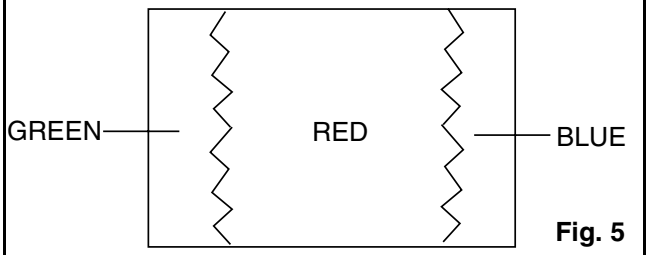


Fig. 5

* This becomes RED COLOR if push 7KEY with a service mode.

1. Set the unit facing east.
2. Operate the unit for over 30 minutes before adjusting.
3. Fully degauss the unit using an external degaussing coil.
4. Set the unit to the AUX mode which is located before CH2 then input a red raster from video in.
5. Loosen the screw on the Deflection Yoke Clamper and pull the Deflection Yoke back away from the screen. (See Fig. 6.)
6. Loosen the Ring Lock and adjust the Purity Magnets so that a red field is obtained at the center of the screen. Tighten Ring Lock. (See Fig. 5,6.)
7. Slowly push the Deflection Yoke toward the bell of the CRT and set it where a uniform red field is obtained.
8. Tighten the clamp screw on the Deflection Yoke.

13. Convergence Adjustment

Purpose: To obtain proper convergence of red, green and blue beams.

Symptom of Misadjustment: If Convergence Adjustment is incorrect, the edge of white letters may have color edges.

Test point	Adj. Point	Mode	Input
---	C.P. Magnet (RB), C.P. Magnet (RB-G), Deflection Yoke	---	Dot Pattern or Crosshatch
Tape	M. EQ.	Spec.	
---	Pattern Generator	See below.	
Figure			

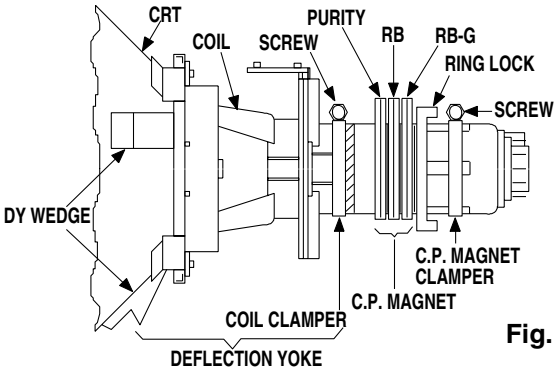


Fig. 6

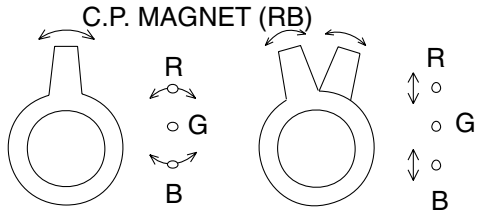


Fig. 7

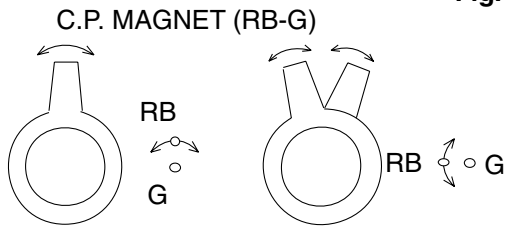
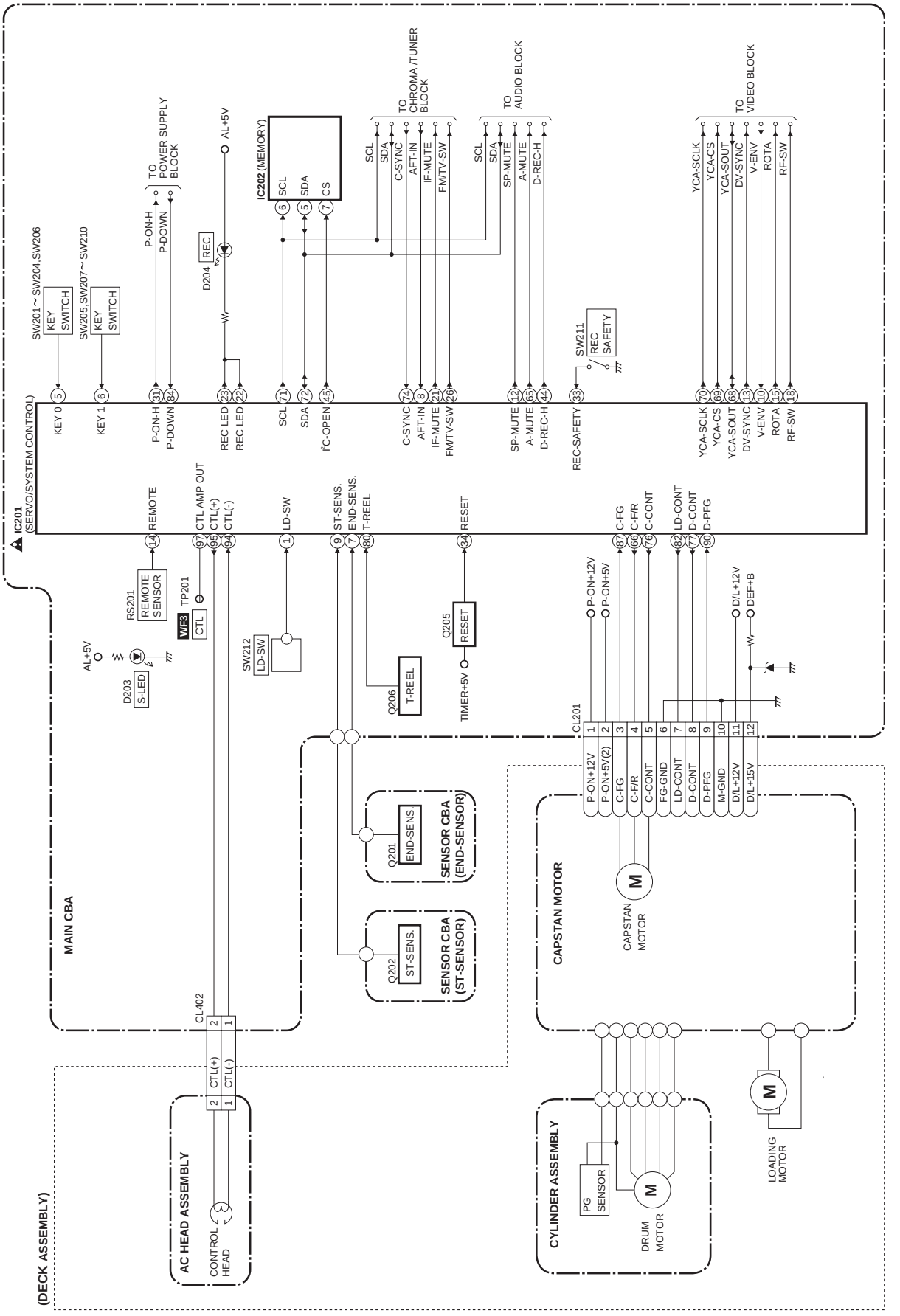


Fig. 8

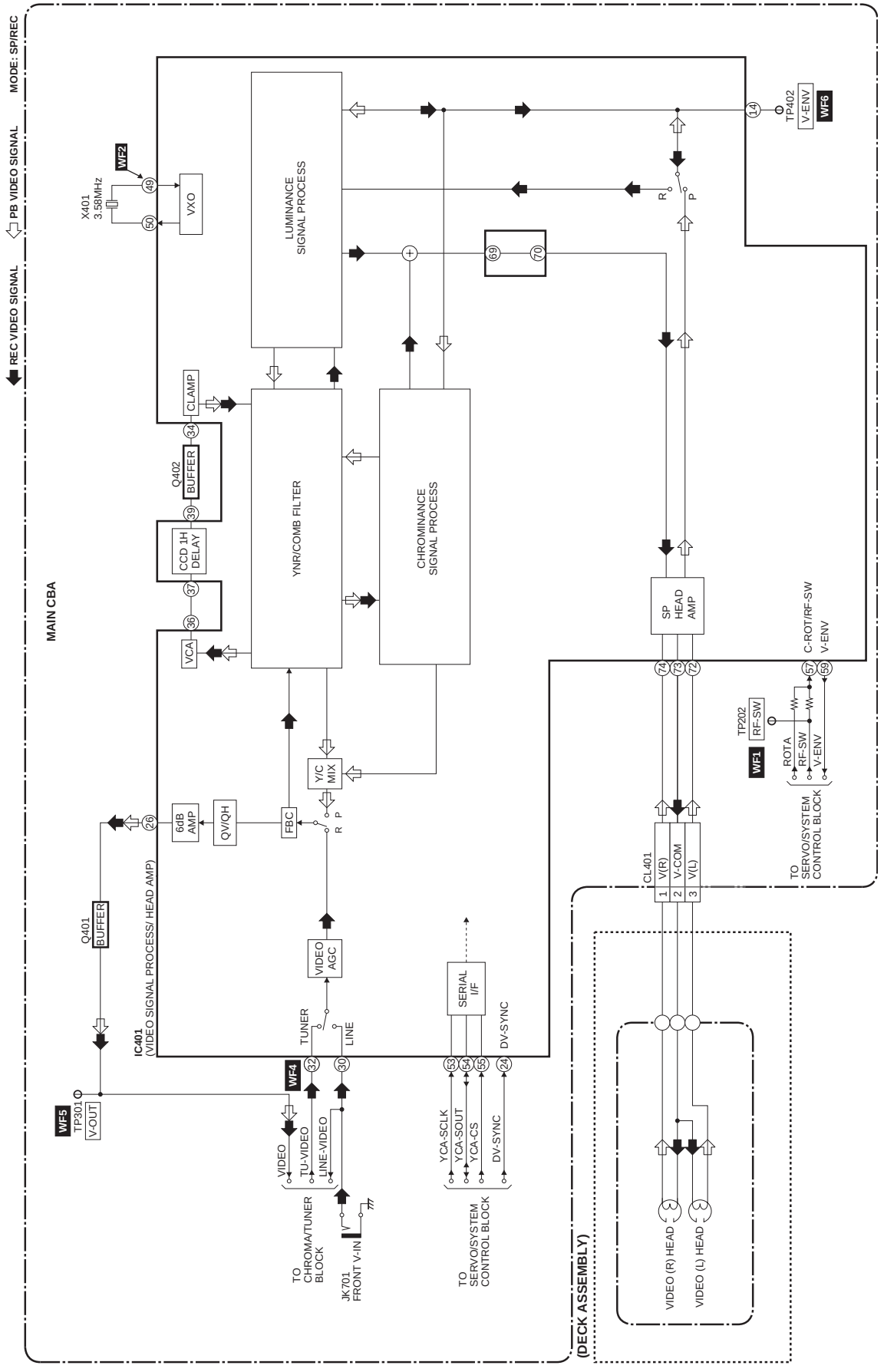
1. Set the unit to the AUX mode which is located before CH2 then input a Dot or crosshatch pattern.
2. Loosen the Ring Lock and align red with blue dots or Crosshatch at the center of the screen by rotating (RB) C.P. Magnets. (See Fig. 7.)
3. Align red / blue with green dots at the center of the screen by rotating (RB-G) C.P. Magnet. (See Fig. 8.)
4. Fix the C.P. Magnets by tightening the Ring Lock.
5. Remove the DY Wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence.
6. Fix the Deflection Yoke by carefully inserting the DY Wedges between CRT and Deflection Yoke.

BLOCK DIAGRAMS

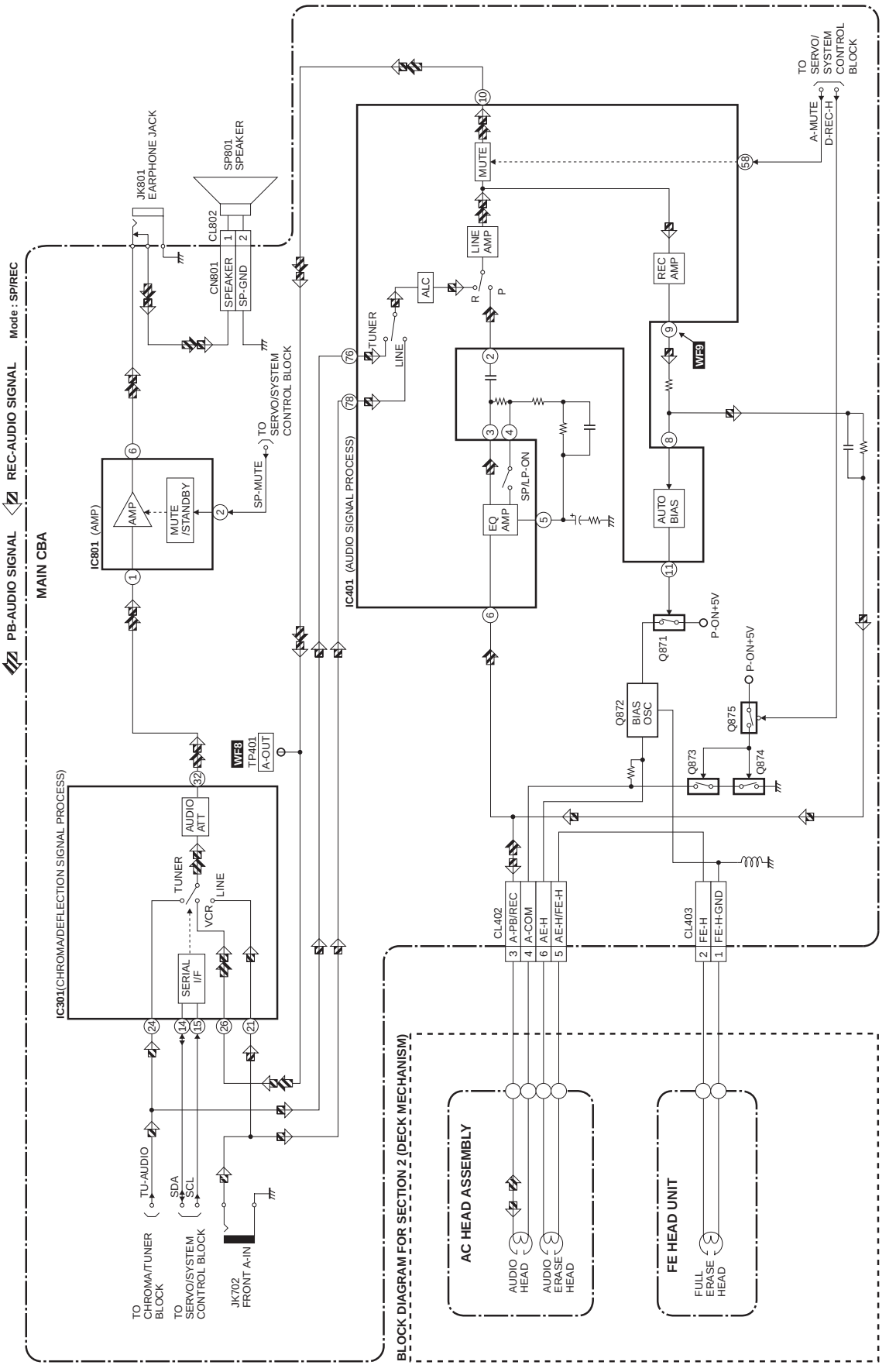
Servo/System Control Block Diagram



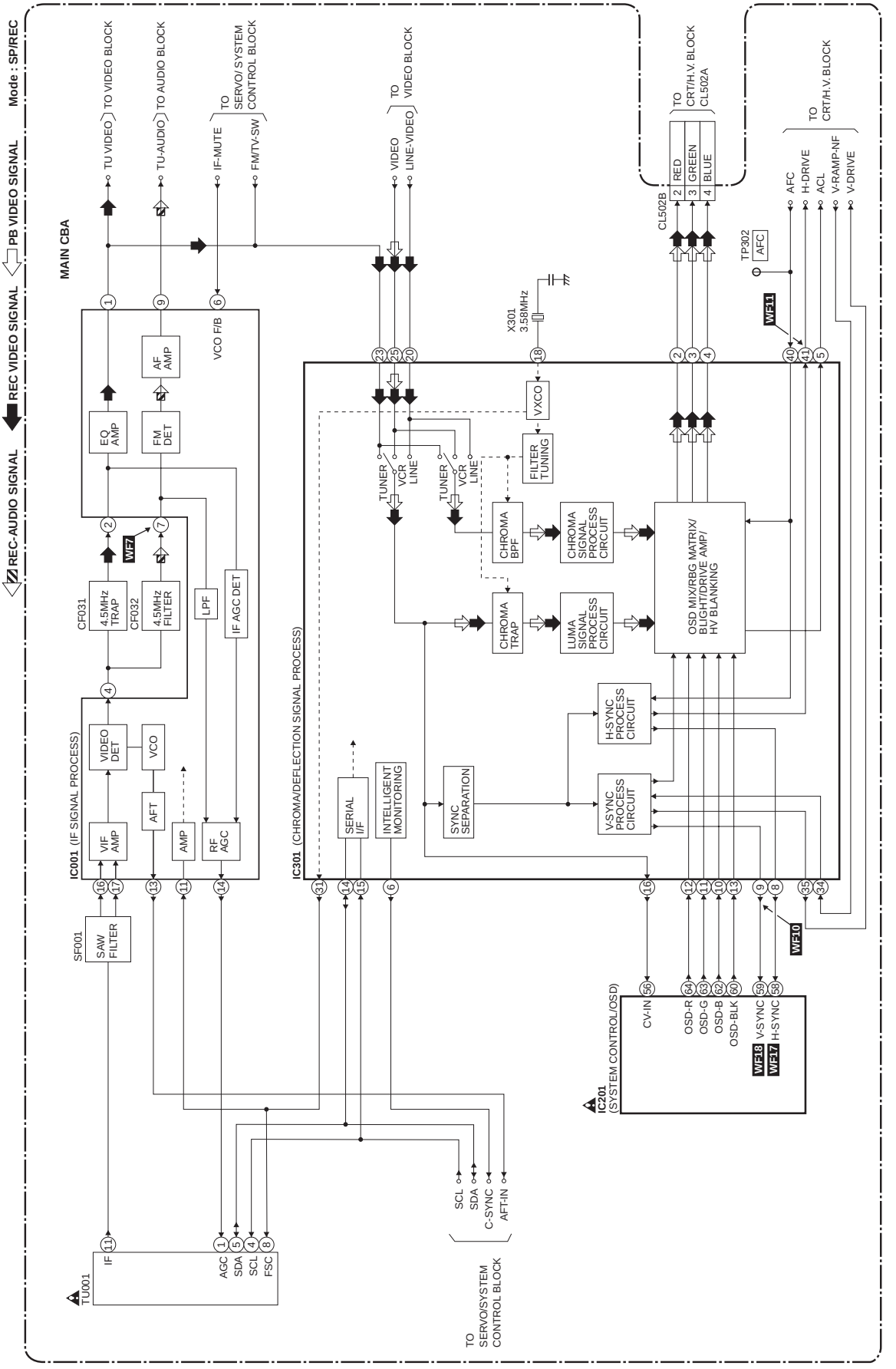
Video Block Diagram



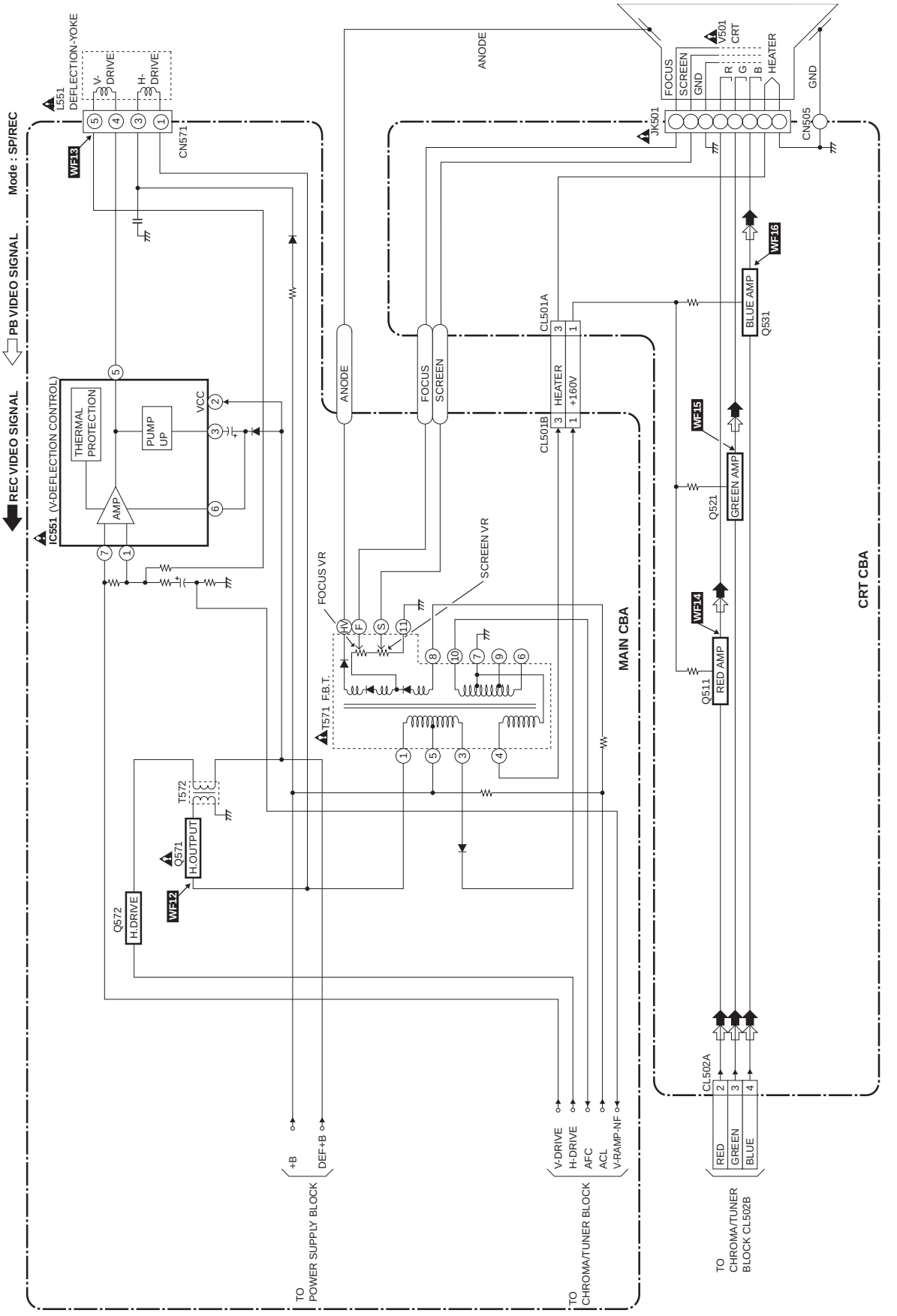
Audio Block Diagram



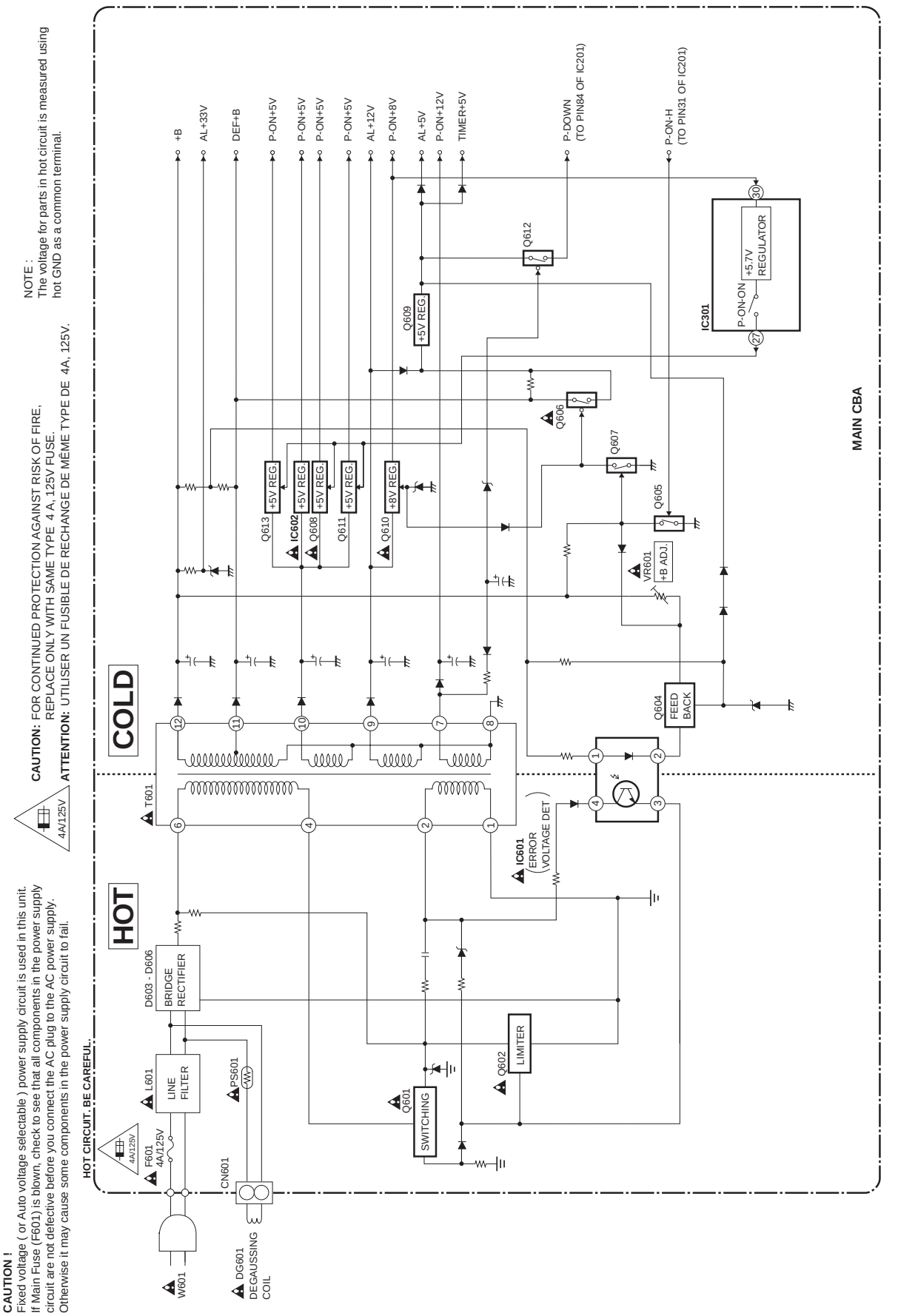
Chroma/Tuner Block Diagram



CRT/H.V. Block Diagram



Power Supply Block Diagram


CAUTION ! Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.
HOT CIRCUIT. BE CAREFUL.
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4 A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.
NOTE : The voltage for parts in hot circuit is measured using hot GND as a common terminal.
HOT
COLD
MAIN CBA
W601
DG601 DEGAUSSING COIL
CN601
F601 4A/125V
L601 LINE FILTER
PS601
D603 - D606 BRIDGE RECTIFIER
T601
Q601 SWITCHING
Q602 LIMITER
IC601 ERROR VOLTAGE DET
Q604 FEED BACK
VR601 +B ADJ
Q605
Q606
Q607
Q608
Q609 +5V REG
Q610 +8V REG
Q611
Q612
Q613
IC602
IC301 P-ON-ON +5.7V REGULATOR
+B
AL+33V
DEF+B
P-ON+5V
P-ON+5V
P-ON+5V
P-ON+5V
AL+12V
P-ON+8V
AL+5V
P-ON+12V
TIMER+5V
P-DOWN (TO PIN84 OF IC201)
P-ON-H (TO PIN31 OF IC201)

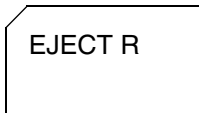
MECHANICAL TROUBLE INDICATOR

1, Each Malfunction Indication

If the MONITOR is turned ON right after the Mechanical Malfunction occurs or POWER SAFETY is turned ON, display the following character to show Malfunction after the EJECT display.

Immediately preceding Malfunction	Display character
REEL Malfunction	R
DRUM Malfunction	D
CASSETTE LOADING Malfunction	C
TAPE LOADING Malfunction	T
P-SAFETY 2	2
P-SAFETY 3	3
P-SAFETY 1	1

Example: If REEL Malfunction



2, Each Malfunction evaluation method

P-SAFETY 1 protect

If P-SAFETY 1 port becomes continuously 2.5V or more for 120 msec. (4 times 40 msec. interval), the unit shall immediately turn OFF the POWER/MONITOR and switch over to the Mechanical Malfunction mode with POWER OFF.

(To return from this mode shall become possible only by POWER Key as in the case of the Mechanical Malfunction).

POWER SAFETY

1) POWER SAFETY 2

   If P-SAFETY 2 port becomes continuously 2.5V or less for 120 msec. (4 times 40 msec. interval) when P-ON-H port is ON, the unit shall be assumed to be the Power Malfunction 2 and immediately turn OFF the POWER/MONITOR and switch over the Mechanical Malfunction mode with POWER OFF.

   (Shall not unload)

   (To return from this mode shall become possible only by POWER Key as in the case of the Mechanical Malfunction).

   * However the POWER SAFETY 2 function shall be disabled during 500 msec. right after the P-ON-H turns ON.

2) POWER SAFETY 3

   If P-SAFETY 3 port becomes continuously 2.5V or over for 120 msec. (4 times 40 msec. interval) when MONITOR is ON, P-SAFETY 3 function is available. After that, if P-SAFETY 3 port becomes continuously 2.5V or less for 120 msec. (4 times 40 msec. interval), the unit shall be assumed to be the Power Malfunction 3 and immediately turn OFF the POWER/MONITOR and switch over the Mechanical Malfunction mode with POWER OFF.

   (Shall not unload)

   (To return from this mode shall become possible only by POWER Key as in the case of the Mechanical Malfunction).

Mechanical Malfunction determination

1) REEL Malfunction detection

Countermeasure for REEL and CAPSTAN motor rotation malfunction (Except CASSETTE LOADING function)

After the Malfunction detection with REEL/CAPSTAN sensor, the unit shall switch over to STOP (B) and be REEL Mechanical Malfunction.

a) If the T-REEL pulse is not impressed after a lapse of 5 sec. at SP, 10 sec. at LP, 14 sec. at SLP, or more in the REEL Rotation Mode like PLAY/REC, FS/RS Mode, and the T-REEL or S-REEL pulse is not impress after a lapse of 4 sec. or more in REEL Rotation Mode of FF/REW, it shall be assumed to stop the rotation and switch over to STOP (B) position, then POWER be turned OFF and the unit be REEL Mechanical Malfunction. (T-REEL and S-REEL for the models on S-REEL and only T-REEL for other models)

b) If the C-FG pulse is not impressed for a lapse of 1 sec. or more during the CAPSTAN MOTOR rotation, it shall be MOTOR Rotation Malfunction (REEL Malfunction).

2) DRUM Malfunction detection

Detect the DRUM rotation at the D-FG input terminal.

If the variation of D-FG input level is not detected for a lapse of 1 sec. or more when D-CONT is "H", it shall be assumed to be Rotation Malfunction and be DRUM Malfunction.

When detect Drum Malfunction, POWER shall be turned OFF after the unit switches over to STOP (B) Mode.

3) Countermeasure for TAPE LOADING Malfunction

Detect the Malfunction with the LOADING Switch.

a) TAPE LOADING Malfunction

If LD-SW does not go to the established position after a lapse of 7 sec. or more from TAPE LOADING or TAPE UNLOADING start, the LOADING function shall immediately be stopped and POWER be turned OFF, and inform the Timer about the LOADING Mechanical Malfunction.

b) LD-SW Position Malfunction at each mode

When the unit operates at each mode, even if the LD-SW position changes from the established one in its mode, it keeps the function according to its mode.

4) Countermeasure for CASSETTE LOADING Malfunction

a) CASSETTE IN operating Malfunction

If LD-SW does not go to SB position after a lapse of 5 sec. or more from the CASSETTE insertion start, the unit starts the CASSETTE OUT operation.

After switch over to CASSETTE OUT operation and then a laps of 5 sec. or more from the CASSETTE OUT operation start, if LD-SW does not go to the EJ position or if START Sensor and END Sensor does not turn "ON" at the EJ position, the unit starts again to insert CASSETTE.

(However in S-INH state, the START/END Sensor shall be disabled).

b) CASSETTE OUT operating Malfunction

After a lapse of 5 sec. or more from CASSETTE OUT operation start, if LD-SW does not go to the EJ position or if START Sensor and END Sensor does not turn "ON" at the EJ position, the unit starts to insert CASSETTE.

(However in S-INH state, the START/END Sensor shall be disabled).

When the unit switches over to CASSETTE insertion at CASSETTE IN or CASSETTE OUT Malfunction, if LD-SW does not go to the SB position after a lapse of 5 sec. or more from CASSETTE insertion start, the function shall immediately be stopped and POWER be turned OFF, and the unit be CASSETTE LOADING Malfunction.

c) When POWER is turned ON, if the CL position or GC position cannot be detected after 5 sec. LD-REV operation and 5 sec. LD-FWD operation, the function shall immediately be stopped and POWER be turned OFF, and the unit be CASSETTE LOADING Malfunction.

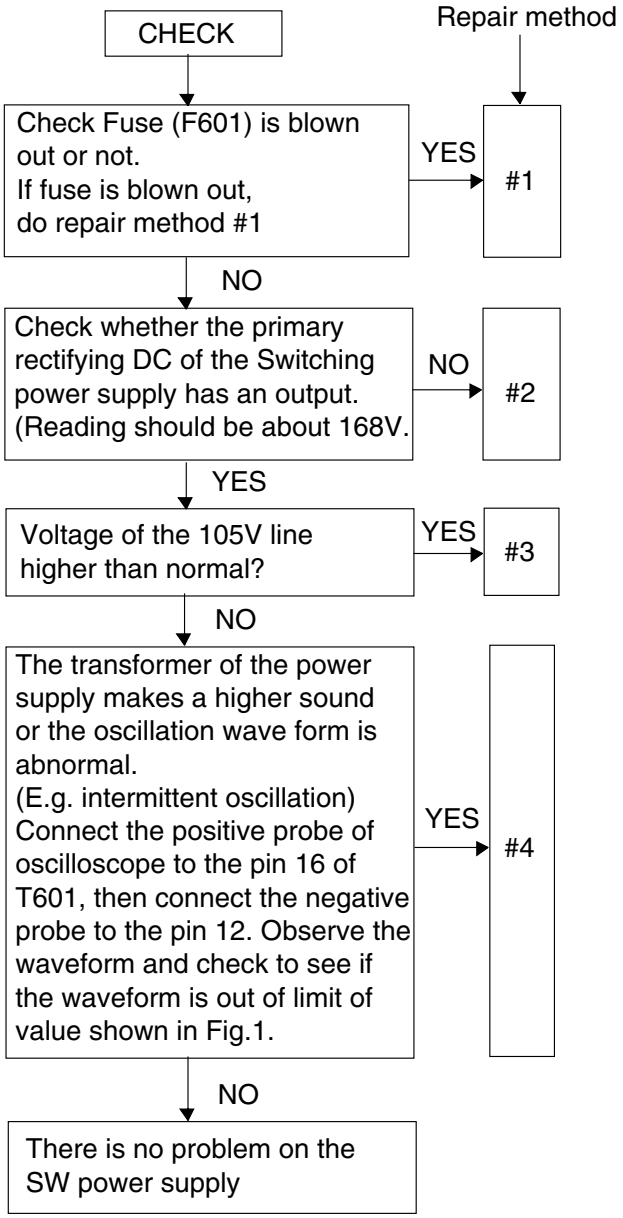
d) When POWER is turned ON without CASSETTE (EJ position) and LD-SW is monitored all the time, if the CL or GC position is detected continuously for 1 sec. or more, the POWER shall be turned OFF and the unit be CASSETTE LOADING Malfunction.

Countermeasure for Mechanical Malfunction

If the unit detects Mechanical Malfunction, turn the POWER OFF. If the unit is Mechanical Malfunction, Key input except POWER key shall be disabled and CASSETTE insertion disabled. When POWER Key is entered, the POWER is turned ON and the unit switches over the EJECT Mode. (Return with POWER ON)

Power Supply Trouble Shooting Guide

It is highly recommended that a variable isolation transformer which can monitor current be used. (Alternatively a variable AC source which monitors current will do). Read directions below before power is added!


CHECK
Repair method
Check Fuse (F601) is blown out or not.
If fuse is blown out, do repair method #1
YES
#1
NO
Check whether the primary rectifying DC of the Switching power supply has an output. (Reading should be about 168V.
NO
#2
YES
Voltage of the 105V line higher than normal?
YES
#3
NO
The transformer of the power supply makes a higher sound or the oscillation wave form is abnormal.
(E.g. intermittent oscillation)
Connect the positive probe of oscilloscope to the pin 16 of T601, then connect the negative probe to the pin 12. Observe the waveform and check to see if the waveform is out of limit of value shown in Fig.1.
YES
#4
NO
There is no problem on the SW power supply

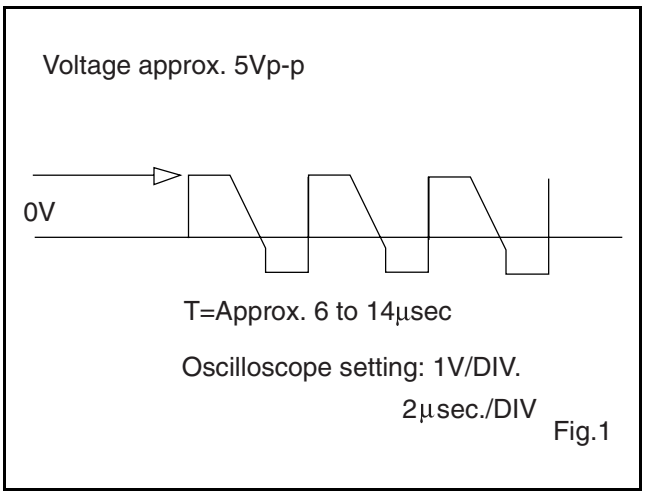


Fig.1

Repair method #1

(Power must be off)

Short circuit in the secondary side. check diode D613, D614, D616, D617 and D618, switching transistor (Q601), control transistor (Q602), diode and resistor replace as necessary.

Disconnect 105V diode (D613), 25V diode (D614), 8V diode (D616), 12V diode (D617), 12V diode (D618) and Check the load continuity of 105V line, 25V line, 8V line, 12V line through a tester (resistance range).

If the tester indicates a lower resistance value around 0 ohm, the line is short-circuited.

Before repairing the switching power supply, find out the short-circuited area of such line and repair it.

If the tester does not indicate any low resistance value (around 0 ohm), no load is short-circuited and there is no problem.

Check for any defective parts while the secondary rectifying diodes are disconnected (D613, D614, D616, D617 and D618) perform a diode check in both forward and reverse directions through a tester.

Repair method #2

Check the primary rectifying diodes (D603-D606) as possible problems. Remove the above mentioned parts and check them. Perform check according to the step 1 and 2 of repair method #1 and check for defects following parts, then if necessary replace with factory originals.

R602 is open or not.

Q601, Q602, D607, D608 and D611 are short or not.

Repair method #3

The feedback circuit which is monitored by the output of D613 105V may not work and this may be regarded as a possible cause, remove IC601 (Photo Coupler), diode (D620) and transistor (Q604) check for defects.

Repair method #4

Check control circuitly which is connecting to Pin 2 and 1 of Switching Transformer T601.

SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

Warning

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

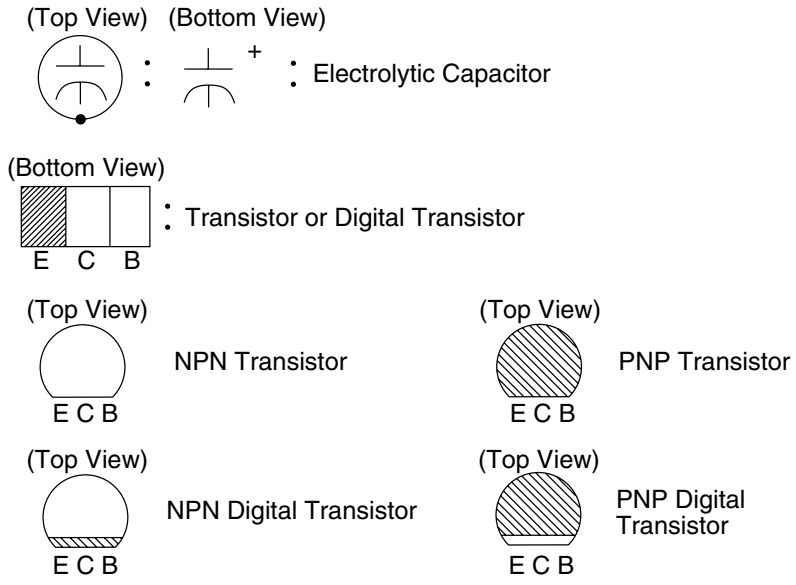
Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

Capacitors and transistors are represented by the following symbols.

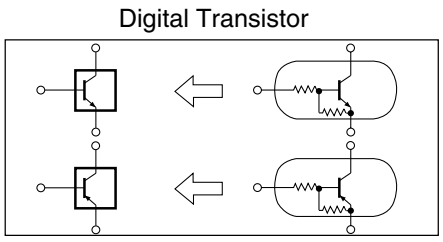
Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in μF ($P=10^{-6}\mu F$).
5. All voltages are DC voltages unless otherwise specified.

CBA Symbols



Schematic Diagram Symbols



LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:** FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE_A,_V FUSE.
   ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE_A,_V.

2. **CAUTION:**

   Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
   If Main Fuse (F601) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. **Note:**

(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors

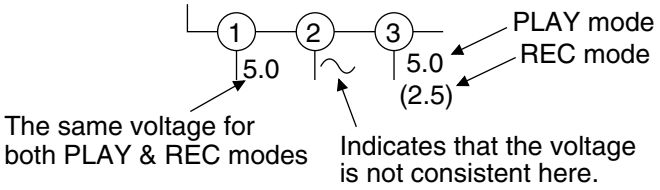
(1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).

(2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Note: Mark "•" is a leadless (chip) component.

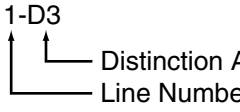
6. Mode: SP/REC

7. Voltage indications for PLAY and REC modes on the schematics are as shown below:

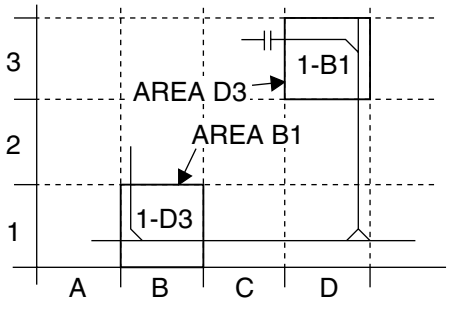


Unit: Volts

8. How to read converged lines



Examples:
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



9. Test Point Information

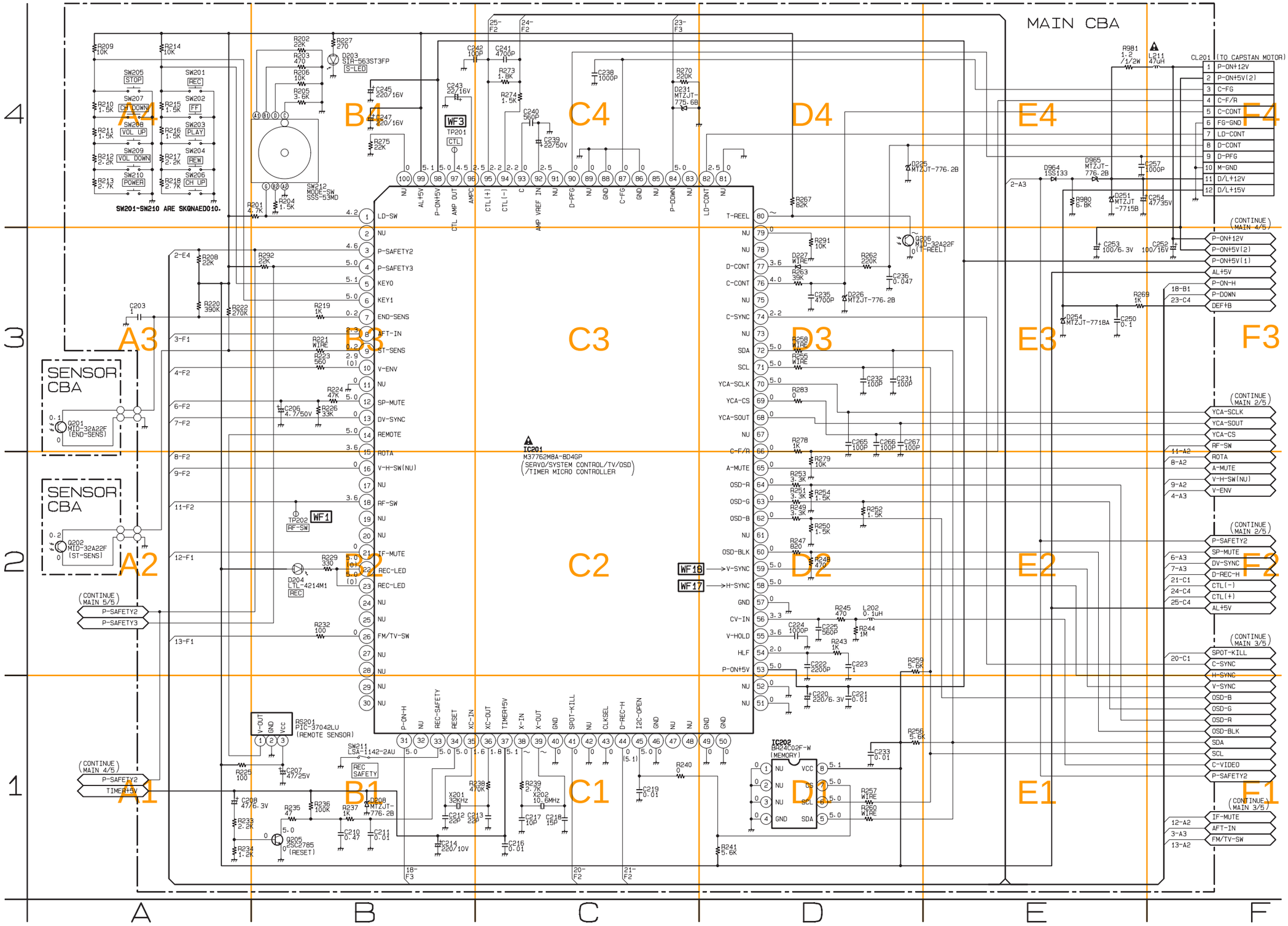
: Indicates a test point with a jumper wire across a hole in the PCB.

: Used to indicate a test point with a component lead on foil side.

: Used to indicate a test point with no test pin.

: Used to indicate a test point with a test pin.

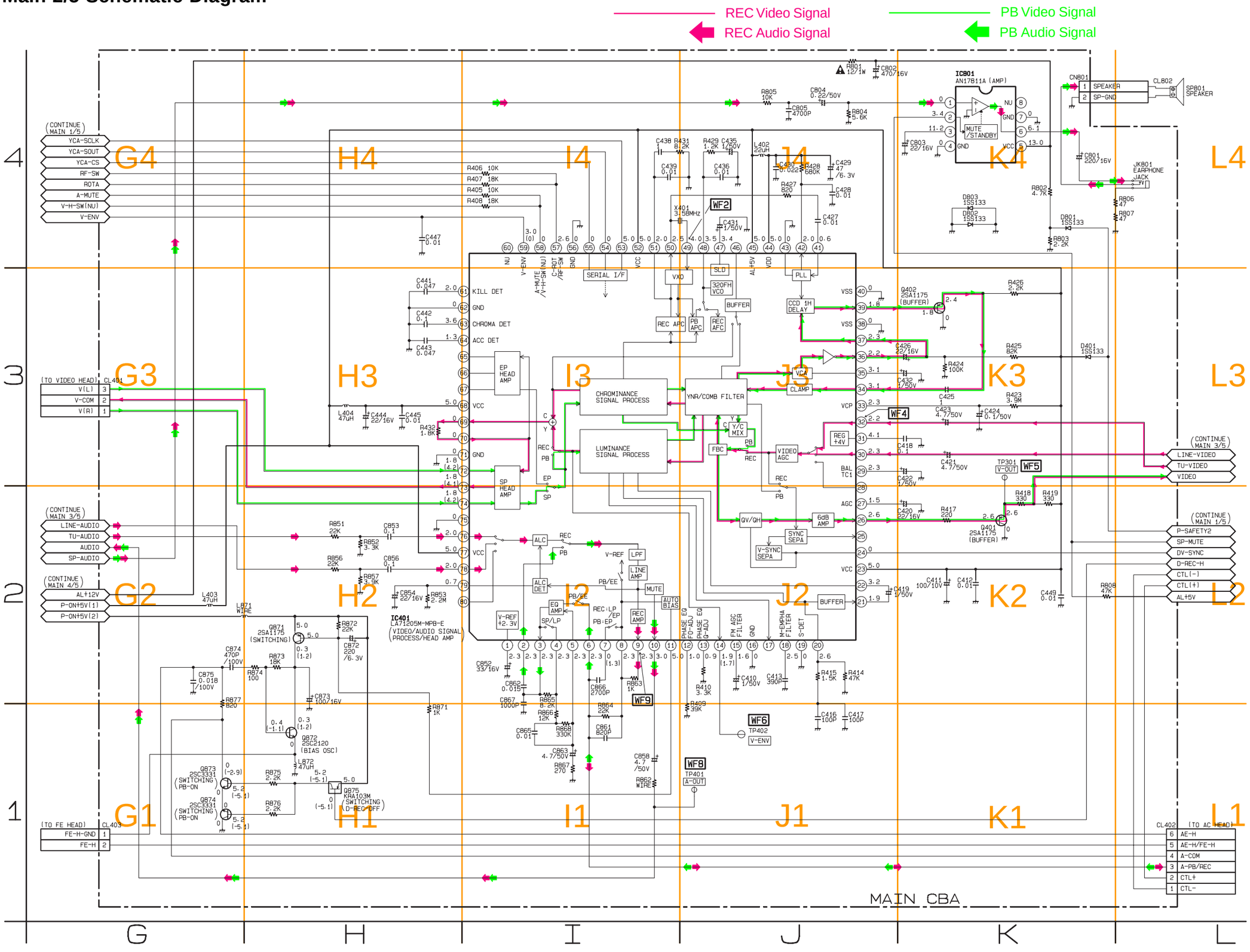
Main 1/5 Schematic Diagram



MAIN 1/5

Ref No.	Position
ICS	
IC201	C-2
IC202	D-1
TRANSISTORS	
Q205	B-1
Q206	D-3
CONNECTOR	
CL201	F-4
TEST POINTS	
TP201	B-4
TP202	B-2

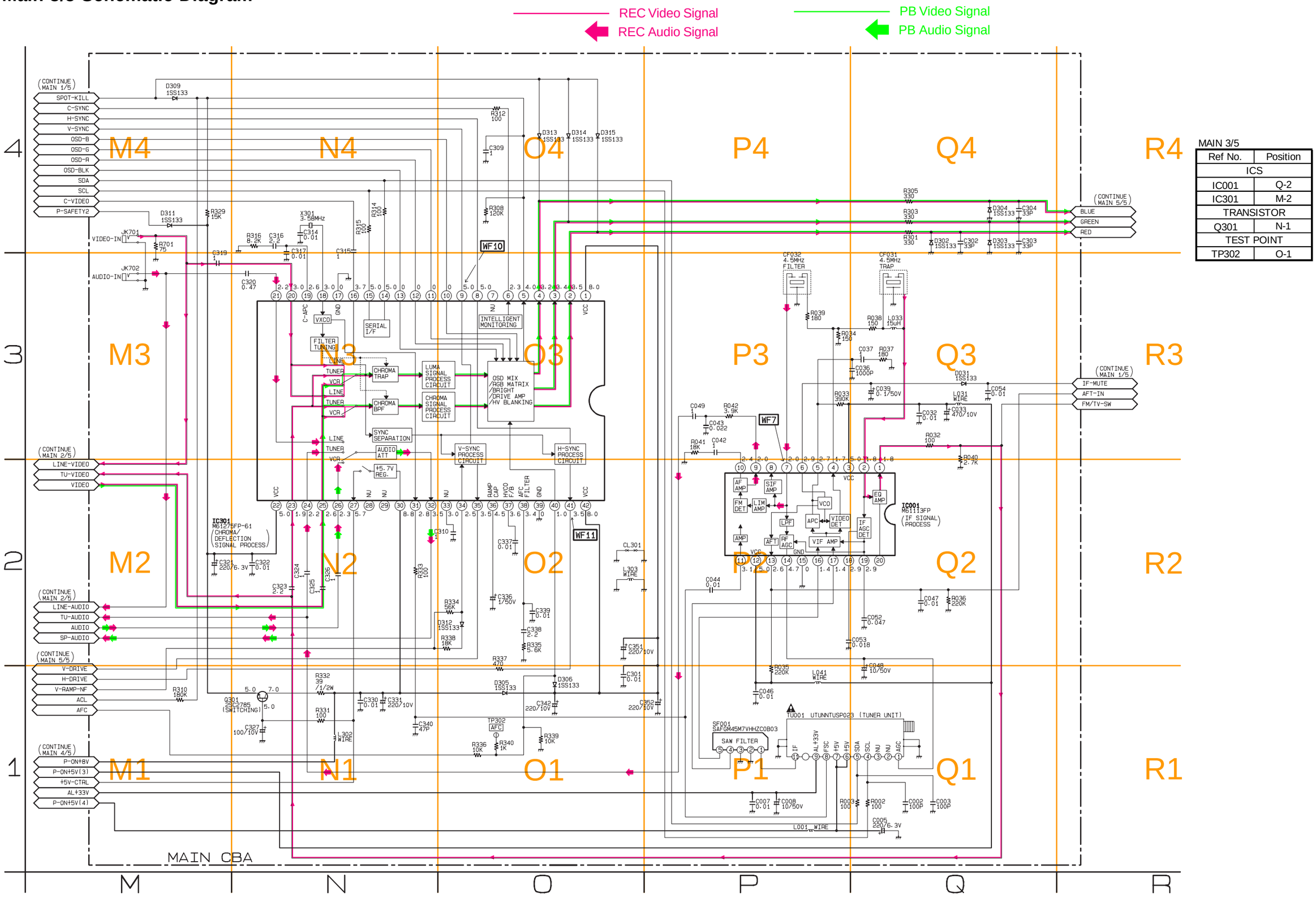
Main 2/5 Schematic Diagram



MAIN 2/5

Ref No.	Position
ICS	
IC401	H-2
IC801	K-4
TRANSISTORS	
Q401	K-2
Q402	K-3
Q871	H-2
Q872	H-1
Q873	G-1
Q874	G-1
Q875	H-1
CONNECTORS	
CL401	G-3
CL402	L-1
CL403	G-1
CN801	K-4
TEST POINTS	
TP301	K-2
TP401	J-1
TP402	J-1

Main 3/5 Schematic Diagram



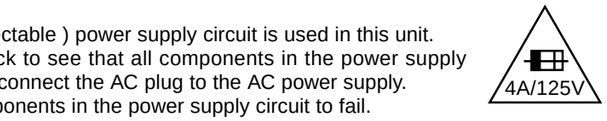
MAIN 3/5

Ref No.	Position
ICS	
IC001	Q-2
IC301	M-2
TRANSISTOR	
Q301	N-1
TEST POINT	
TP302	O-1

Main 4/5 Schematic Diagram

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.



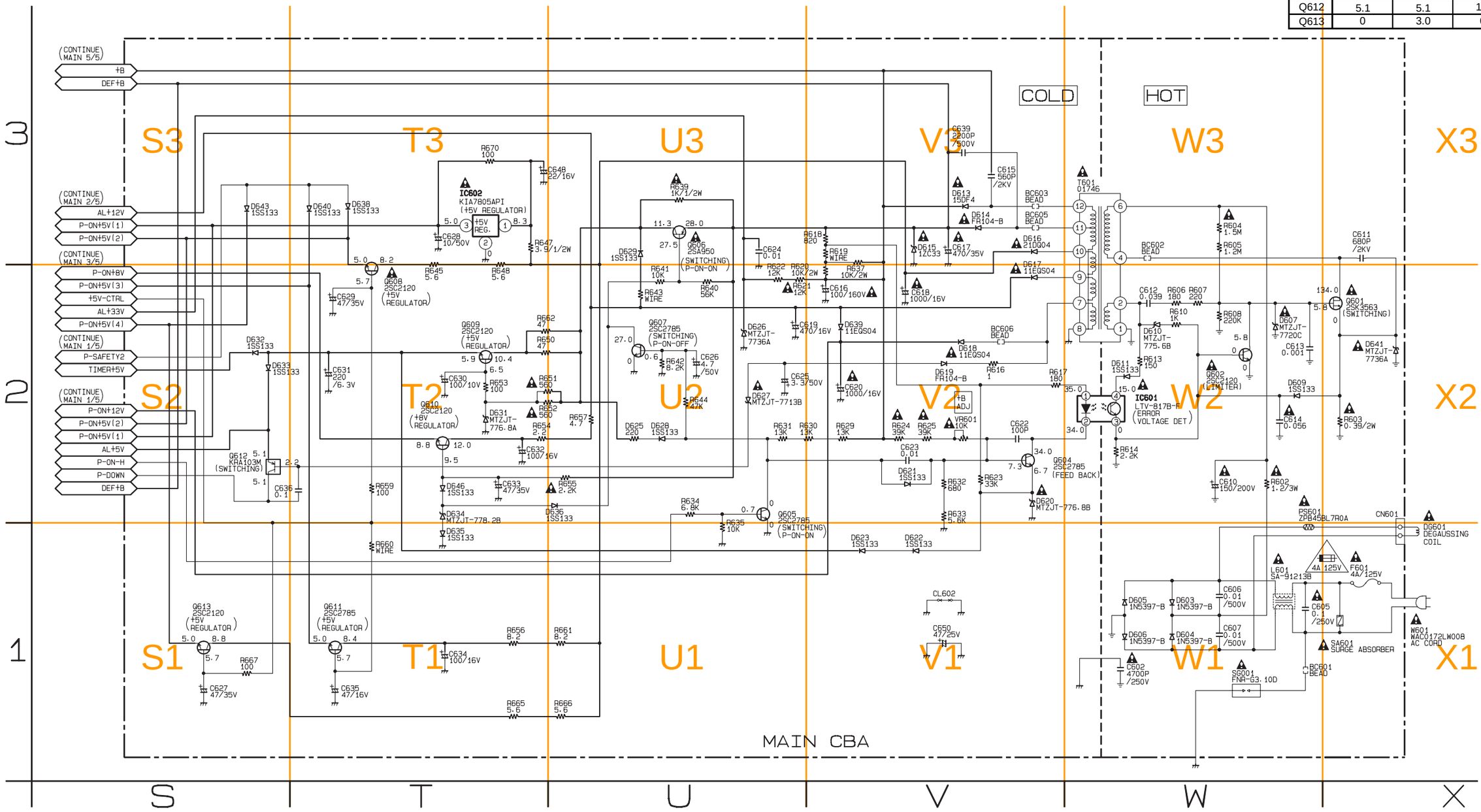
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

MAIN 4/5

Ref No.	Position	Ref No.	Position
ICS		TRANSISTORS	
IC601	W-2	Q609	T-2
IC602	T-3	Q610	T-2
TRANSISTORS		Q611	T-1
Q601	X-2	Q612	S-2
Q602	W-2	Q613	S-1
Q604	V-2	CONNECTOR	
Q605	U-2	CN601	X-1
Q606	U-3	VARIABLE RESISTOR	
Q607	U-2	VR601	V-2
Q608	T-2		

VOLTAGE CHART (Power off mode)

Ref. No.	1	2	3	4
IC601	11.0	10.0	0	16.0
Ref. No.	1	2	3	
IC602	3.0	0	1.8	
Ref. No.	S	D	G	
Q601	0	137.0	1.8	
Ref. No.	E	C	B	
Q602	0	3.2	0	
Q604	6.7	9.9	7.8	
Q605	0	7.9	0	
Q606	8.9	8.8	8.2	
Q607	0	0	0.7	
Q608	0	3.0	0	
Q609	5.8	8.2	6.5	
Q610	0.9	5.6	1.4	
Q611	0.1	3.0	0	
Q612	5.1	5.1	1.9	
Q613	0	3.0	0	



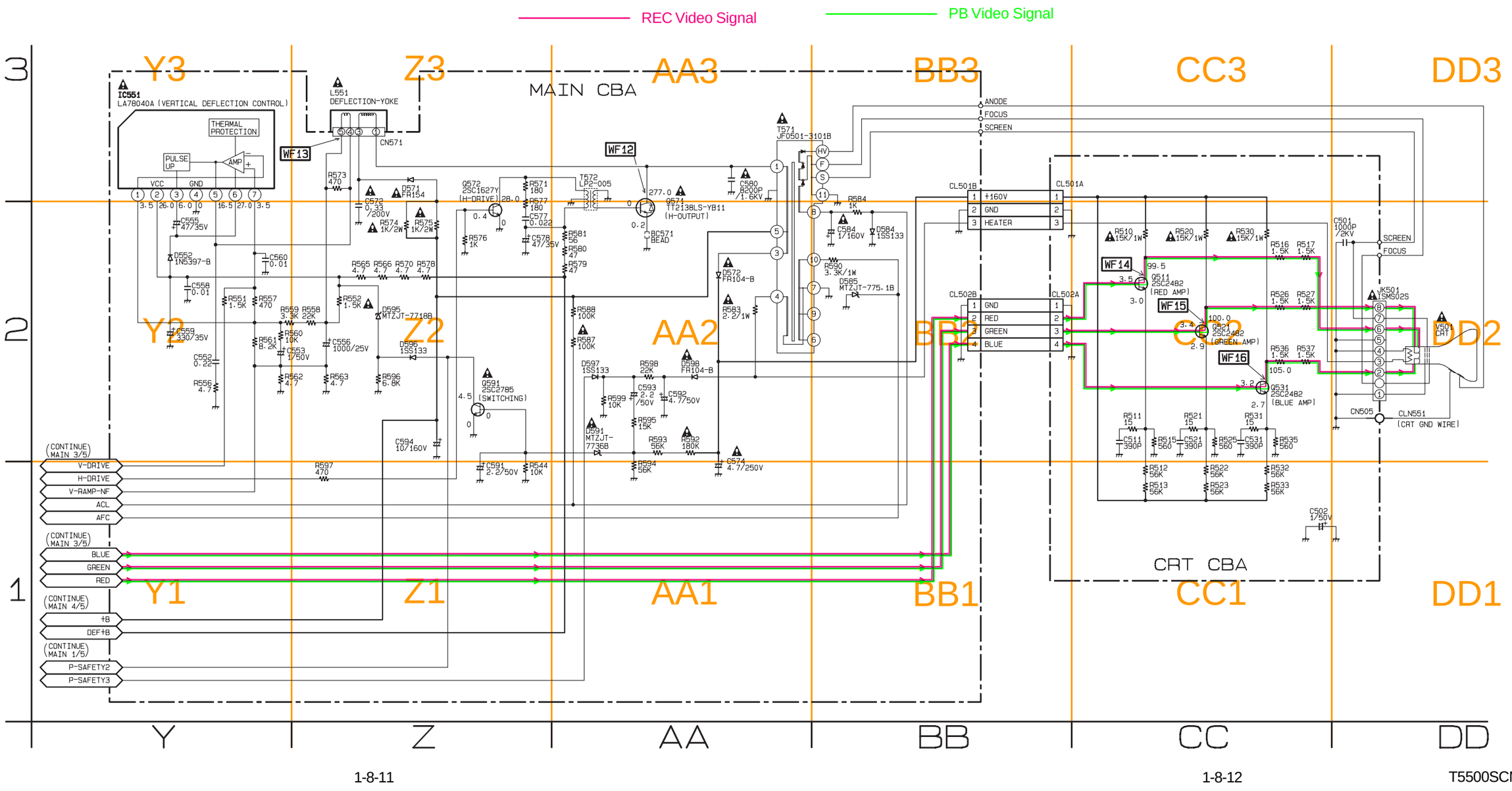
Main 5/5 & CRT Schematic Diagram

MAIN 5/5

Ref No.	Position
IC	
IC551	Y-3
TRANSISTORS	
Q571	AA-2
Q572	Z-3
Q591	Z-2
CONNECTORS	
CL501B	BB-3
CL502B	BB-2
CN571	Z-3

CRT

Ref No.	Position
TRANSISTORS	
Q511	CC-2
Q521	CC-2
Q531	CC-2
CONNECTORS	
CL501A	BB-3
CL502A	BB-2
CN505	DD-2

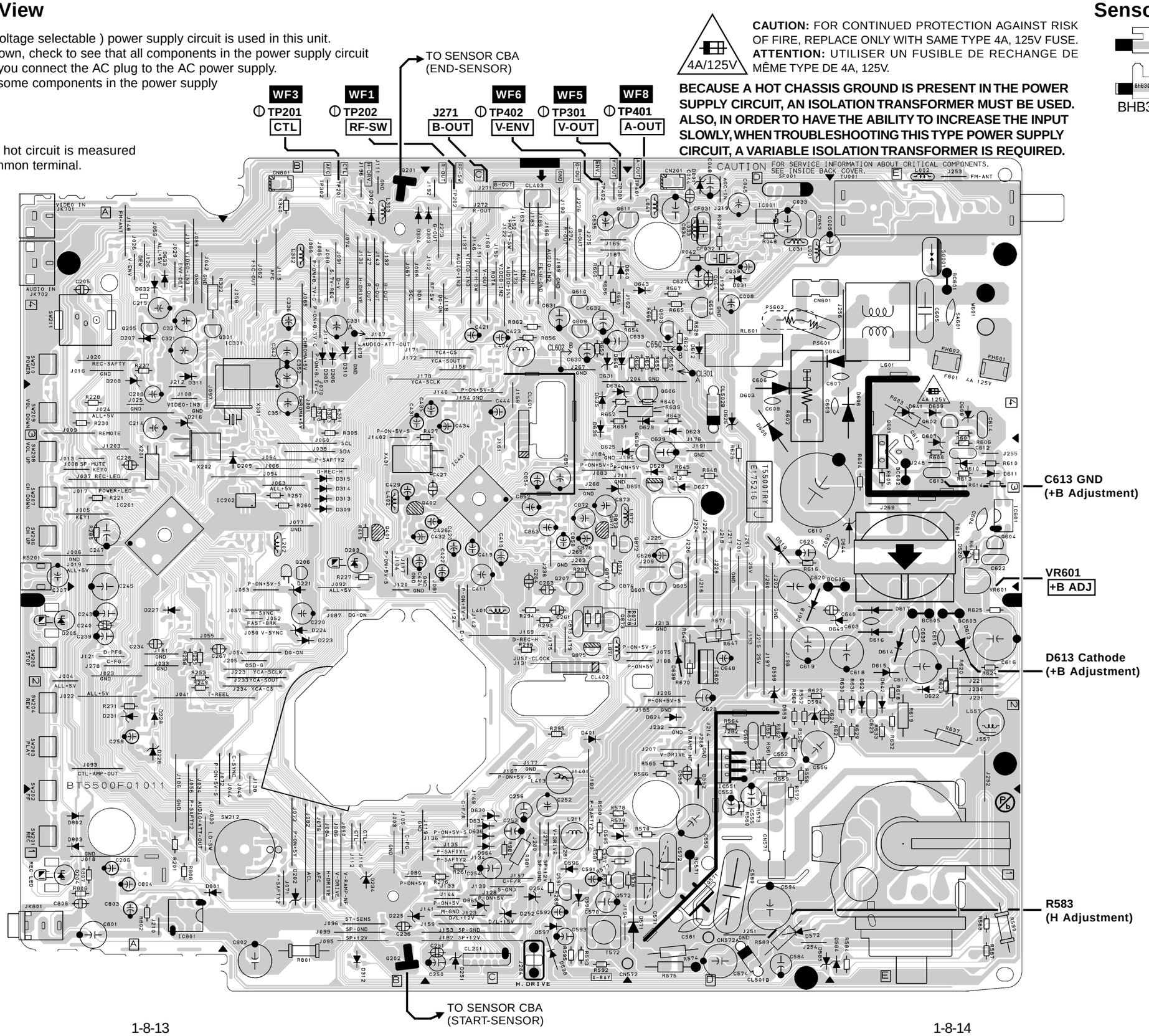


Main CBA Top View

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

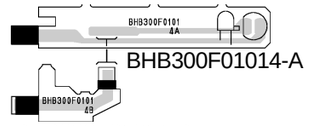


4A/125V

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

Sensor CBA Top View



MAIN CBA

Ref No.	Position
ICS	
IC001	D-4
IC201	A-3
IC202	B-3
IC301	B-4
IC401	C-3
IC551	D-2
IC601	E-3
IC602	D-2
IC801	A-1
TRANSISTORS	
Q205	A-4
Q206	B-3
Q301	A-4
Q401	B-3
Q402	B-3
Q571	D-1
Q572	C-1
Q591	C-1
Q601	E-3
Q602	E-3
Q604	E-3
Q605	D-3
Q606	D-3
Q607	D-2
Q608	D-3
Q609	C-4
Q610	C-4
Q611	C-4
Q612	D-3
Q613	D-4
Q871	C-3
Q872	D-3
Q873	C-2
Q874	C-3
Q875	C-2
CONNECTORS	
CL201	C-1
CL401	C-3
CL402	C-2
CL403	C-4
CL501B	D-1
CL502B	D-3
CN571	D-1
CN601	D-4
CN801	B-4
TEST POINTS	
TP201	B-4
TP202	C-4
TP301	C-4
TP302	B-4
TP401	D-4
TP402	C-4
VARIABLE RESISTOR	
VR601	E-2

Main CBA Bottom View

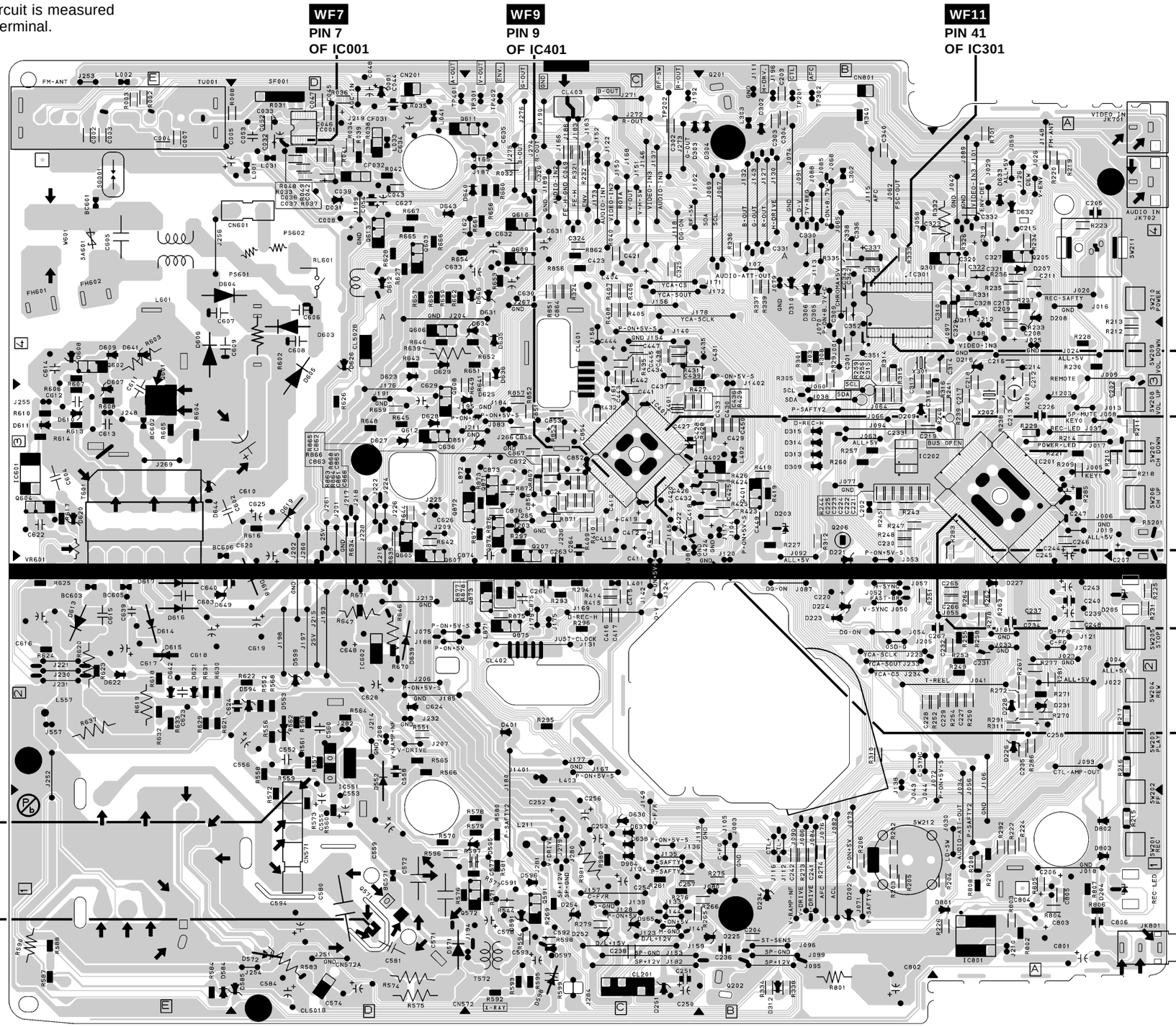
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F601) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

4A/125V

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A, 125V FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 4A, 125V.

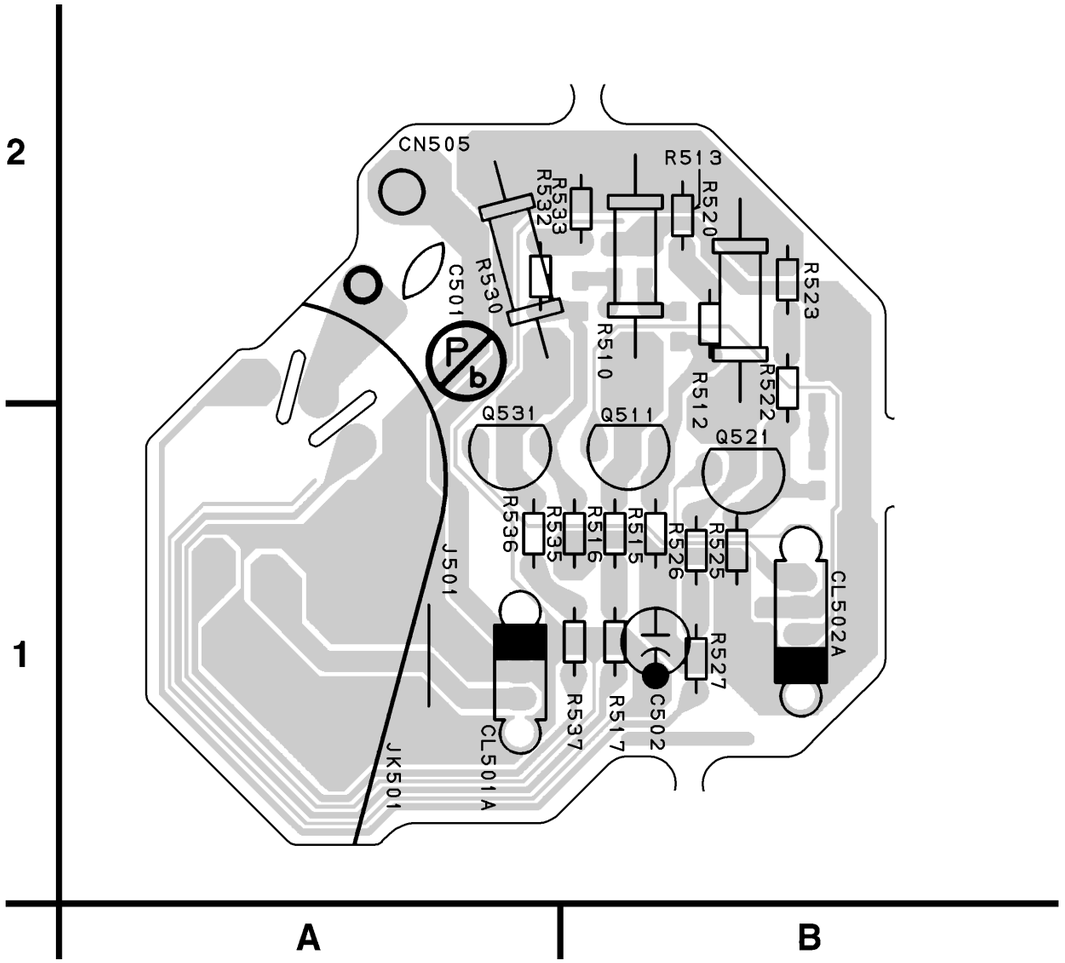
BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT, AN ISOLATION TRANSFORMER MUST BE USED. ALSO, IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY, WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT, A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.



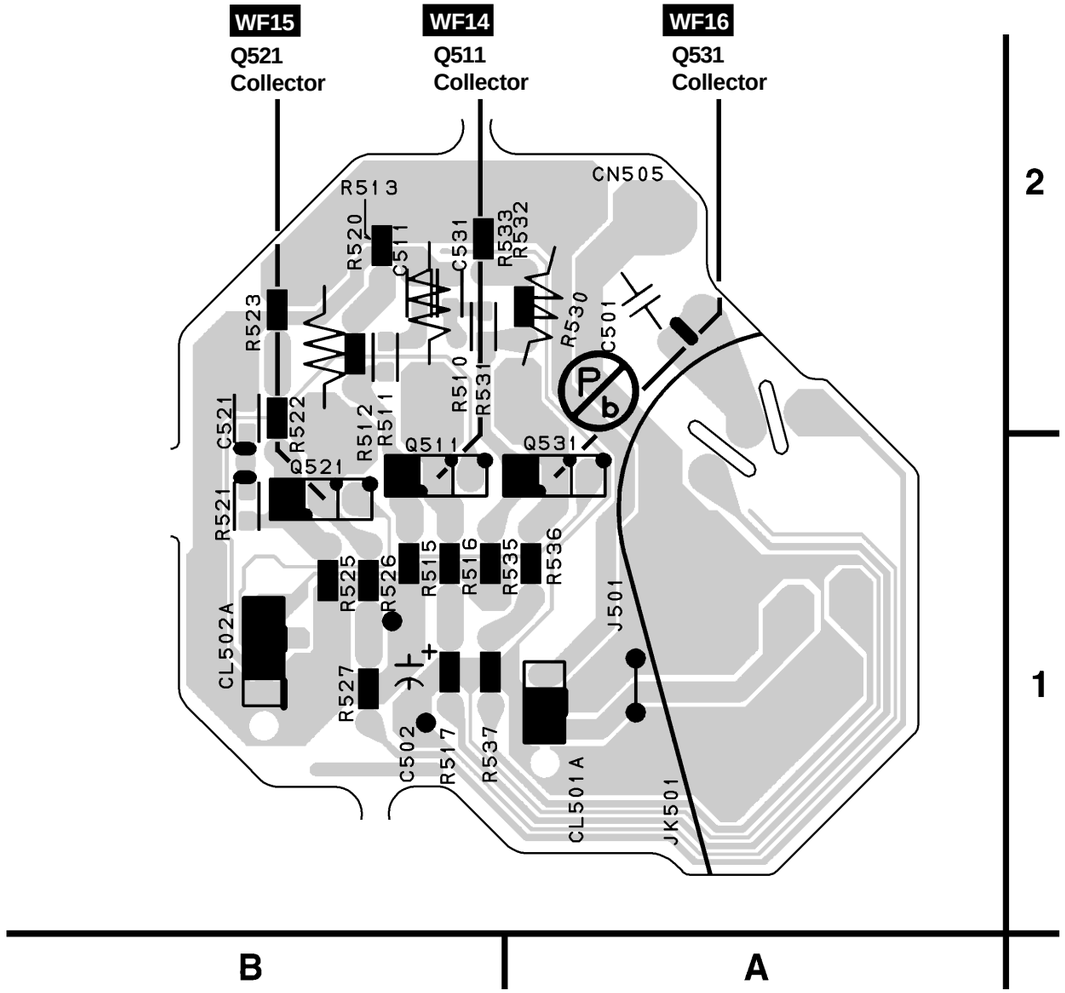
CRT CBA Top View

CRT CBA

Ref No.	Position
TRANSISTORS	
Q511	B-1
Q521	B-1
Q531	A-1
CONNECTORS	
CL501A	A-1
CL502A	B-1
CN505	B-2

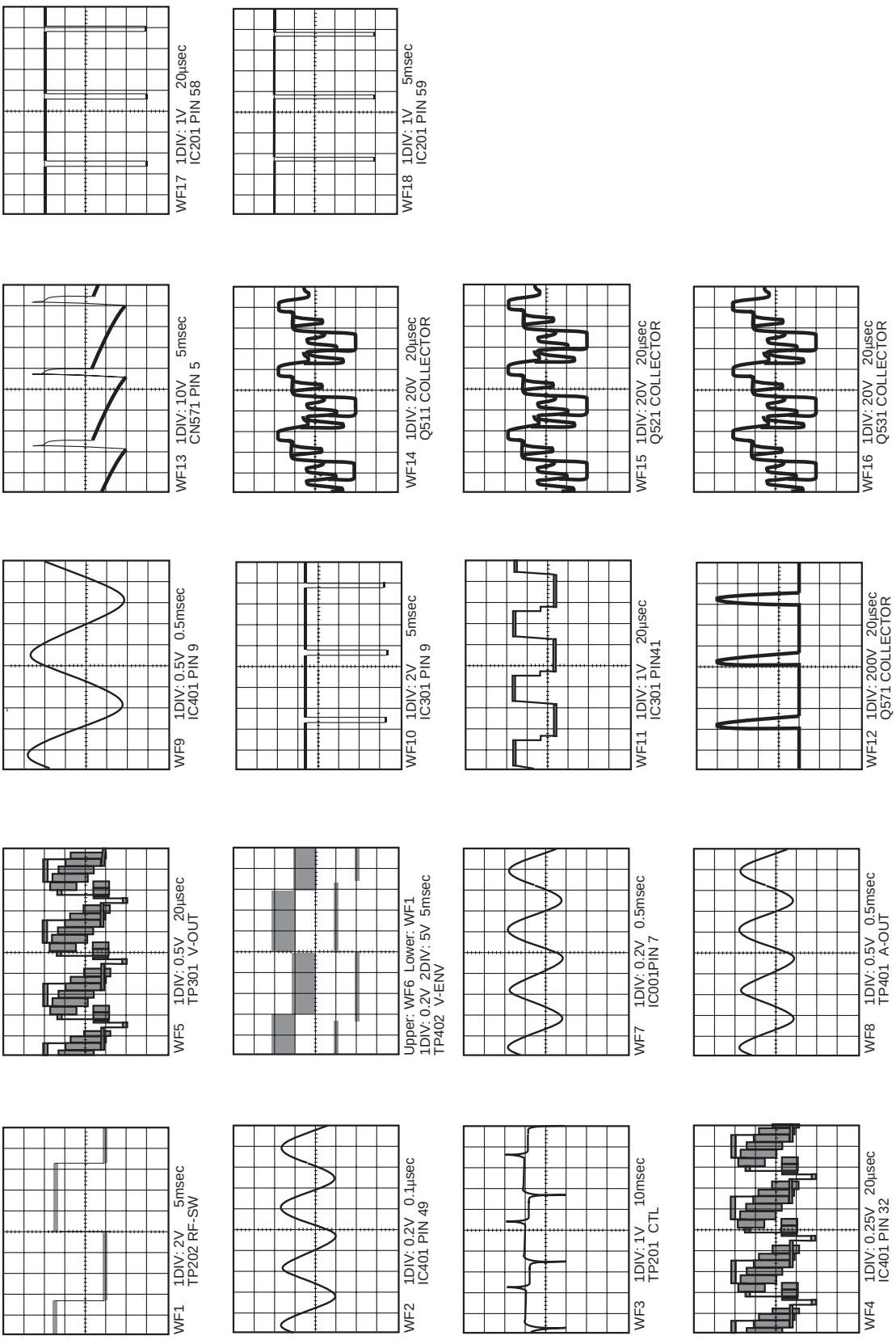


CRT CBA Bottom View

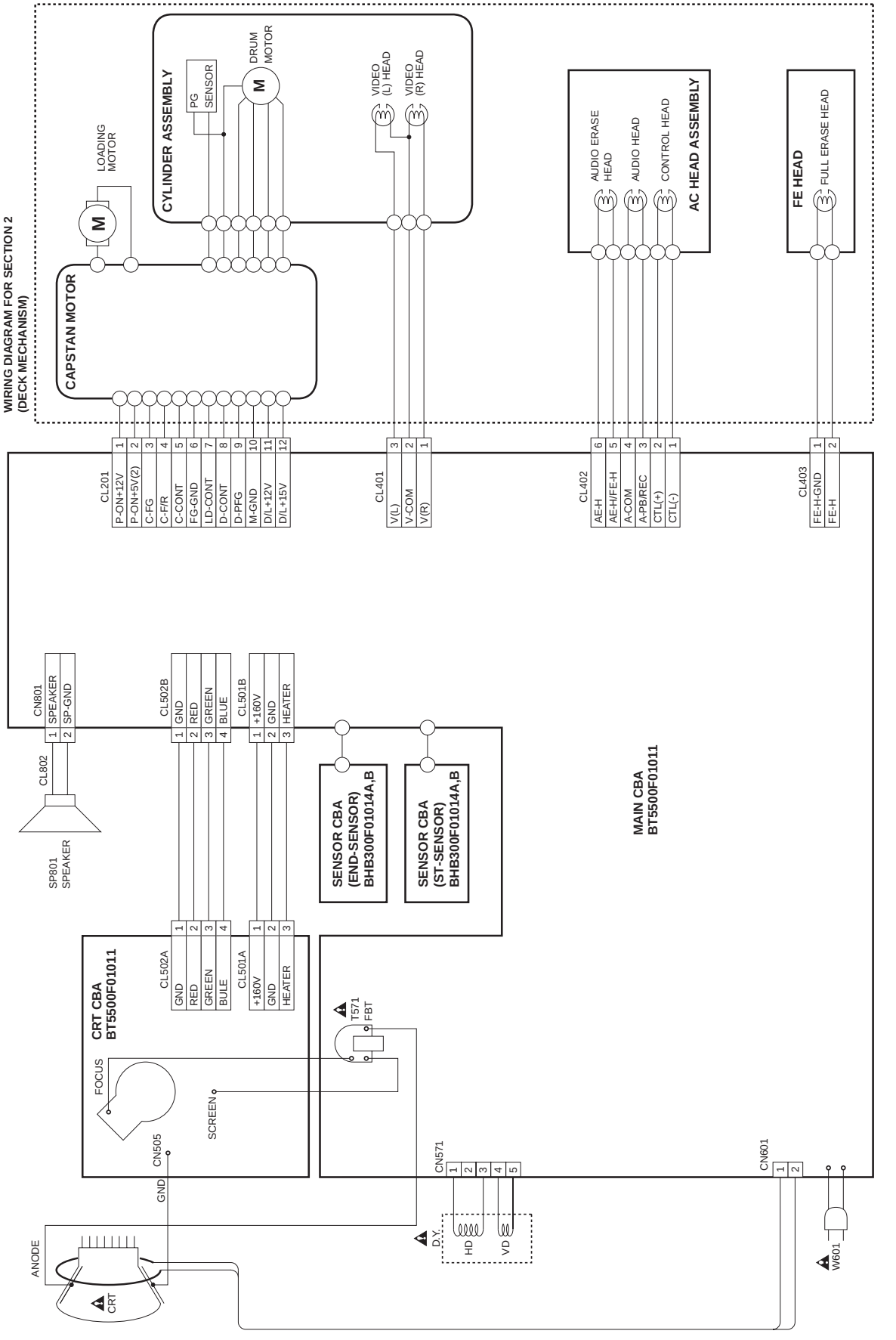


WAVEFORMS

WAVEFORM NOTES
INPUT: NTSC COLOR BAR SIGNAL (WITH 1kHz AUDIO SIGNAL)
BRIGHTNESS, COLOR AND TINT CONTROLS: CENTER POSITION
CONTRAST CONTROL: APPROX 70%
VOLTAGES SHOWN ARE RANGE OF OSCILLOSCOPE SETTING.


WF1 1DIV: 2V 5msec TP202 RF-SW
WF2 1DIV: 0.2V 0.1µsec IC401 PIN 49
WF3 1DIV: 1V 10msec TP201 CTL
WF4 1DIV: 0.25V 20µsec IC401 PIN 32
WF5 1DIV: 0.5V 20µsec TP301 V-OUT
Upper: WF6 Lower: WF1 1DIV: 0.2V 2DIV: 5V 5msec TP402 V-ENV
WF7 1DIV: 0.2V 0.5msec IC001PIN 7
WF8 1DIV: 0.5V 0.5msec TP401 A-OUT
WF9 1DIV: 0.5V 0.5msec IC401 PIN 9
WF10 1DIV: 2V 5msec IC301 PIN 9
WF11 1DIV: 1V 20µsec IC301 PIN41
WF12 1DIV: 200V 20µsec Q571 COLLECTOR
WF13 1DIV: 10V 5msec CN571 PIN 5
WF14 1DIV: 20V 20µsec Q511 COLLECTOR
WF15 1DIV: 20V 20µsec Q521 COLLECTOR
WF16 1DIV: 20V 20µsec Q531 COLLECTOR
WF17 1DIV: 1V 20µsec IC201 PIN 58
WF18 1DIV: 1V 5msec IC201 PIN 59

WIRING DIAGRAM



SYSTEM CONTROL TIMING CHARTS

Chart 1

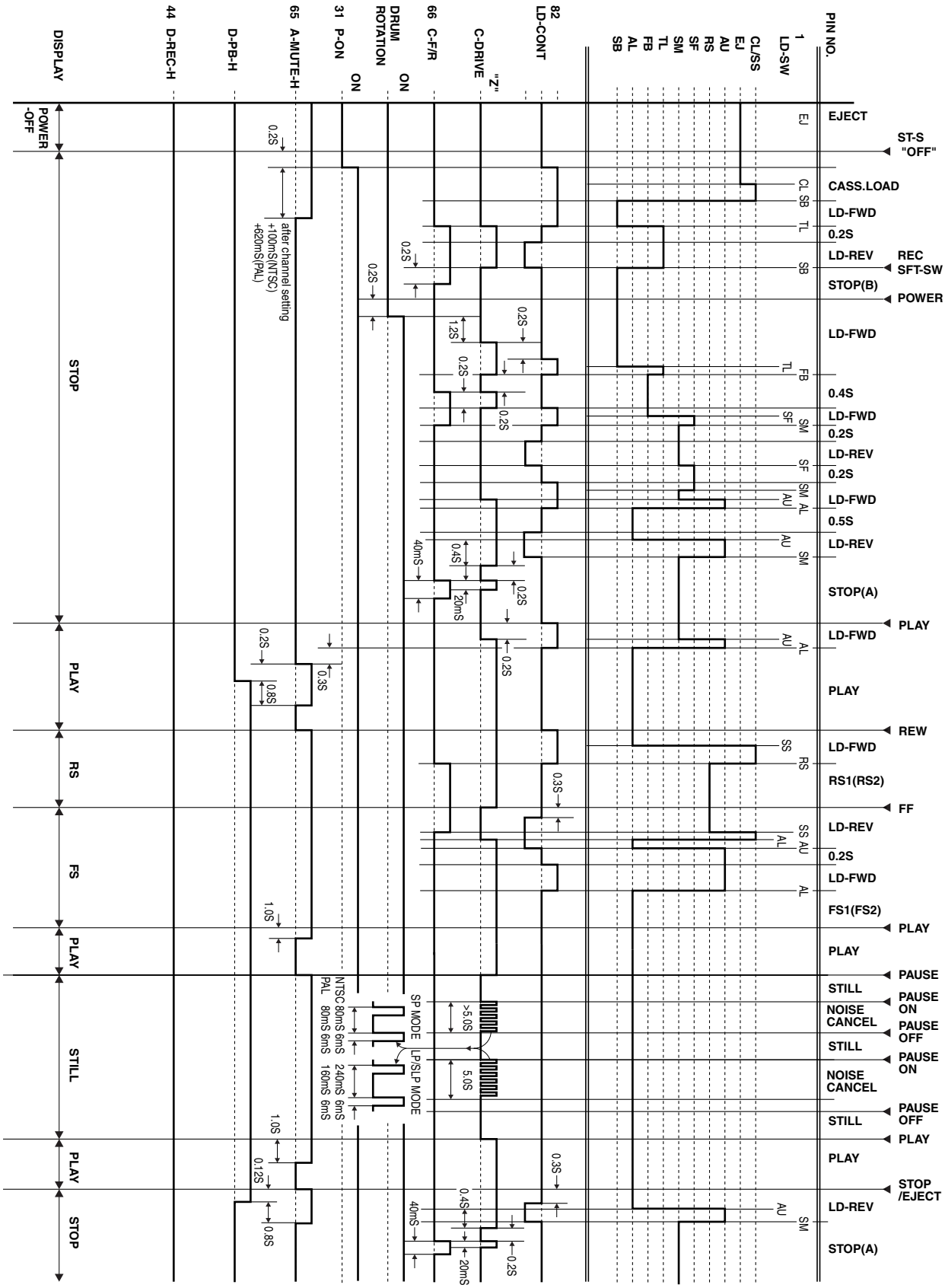
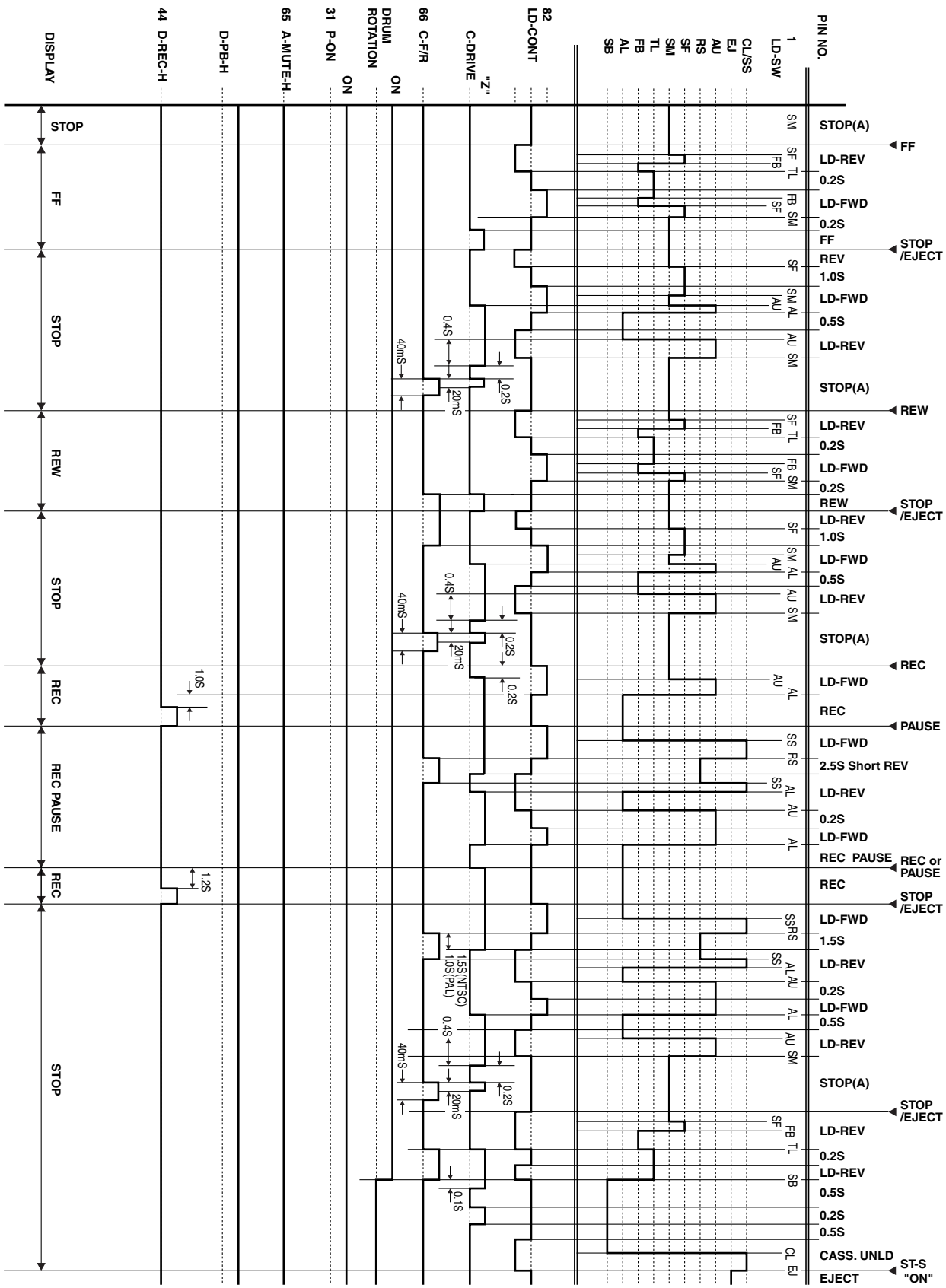


Chart 2


2. STOP(A) -> FF -> STOP(A) -> REW -> STOP(A) -> REC -> PAUSE -> PAUSE or REC -> STOP(A) -> EJECT
PIN NO.
1 LD-SW
CL/SS
EJ
AU
RS
SF
SM
TL
FB
AL
SB
82 LD-CONT
"Z" C-DRIVE
66 C-F/R
DRUM ROTATION
31 P-ON
65 A-MUTE-H
D-PB-H
44 D-REC-H
DISPLAY
ON
STOP(A)
FF
LD-REV
0.2S
LD-FWD
STOP /EJECT
REV
1.0S
0.5S
REW
REC
PAUSE
2.5S Short REV
REC PAUSE
REC or PAUSE
1.5S(NTSC) 1.0S(PAL)
0.1S
CASS. UNLD
EJECT
ST-S "ON"
0.4S
0.45
40mS
20mS
1.0S
1.2S
STOP
FF
REW
REC
REC PAUSE
REC
STOP

IC PIN FUNCTION DESCRIPTIONS

IC201 (TV/VCR Micro Controller)

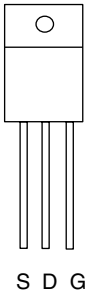
"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	IN/ OUT	Signal Name	Function
1	IN	LD-SW	Loading Switch Input
2	-	NU	Not Used
3	IN	P-SAFETY 2	Power Supply Failure Detection 2
4	IN	P-SAFETY 3	Power Supply Failure Detection 3
5	IN	KEY0	Key 0 Input
6	IN	KEY1	Key 1 Input
7	IN	END-SENS	End-Sensor
8	IN	AFT-IN	AFT Input
9	IN	ST-SENS	Start-Sensor
10	IN	V-ENV	Video Envelope Input
11	-	NU	Not Used
12	OUT	SP-MUTE	Speaker Mute Output
13	OUT	DV-SYNC	Artificial V-Sync Output
14	IN	REMOTE	Remote Signal Input
15	OUT	ROTA	Color Phase Rotary Changeover SIgnal
16	-	V-H-SW(NU)	Not Used
17	-	NU	Not Used
18	OUT	RF-SW	Video Head Switching Pulse
19	-	NU	Not Used
20	-	NU	Not Used
21	-	IF-MUTE	IF-MUTE Signal
22	OUT	REC-LED	Recording LED Control Signal
23	OUT	REC-LED	Recording LED Control Signal
24	-	NU	Not Used
25	-	NU	Not Used
26	-	FM/TV-SW	FM/TV-SW Signal
27	-	NU	Not Used
28	-	NU	Not Used
29	-	NU	Not Used
30	-	NU	Not Used
31	OUT	P-ON-H	Power On Signal at High
32	-	NU	Not Used
33	IN	REC-SAFETY	Record Protection Tab Detection
34	IN	RESET	System Reset Signal (Reset="L")
35	IN	XC-IN	Sub Clock 32 kHz
36	OUT	XC-OUT	Sub Clock 32 kHz
37	-	TIMER+5V	Vcc
38	IN	X-IN	Main Clock Input
39	OUT	X-OUT	Main Clock Output
40	-	GND	GND
41	OUT	SPOT-KILL	Counter-measure for Spot
42	-	NU	Not Used
43	IN	CLKSEL	Clock Select (GND)
44	OUT	D-REC-H	Delayed Record Signal
45	IN	I2C-OPEN	White Balance Adjust Mode Judgment
46	-	GND	GND
47	-	NU	Not Used
48	-	NU	Not Used
49	-	GND	OSD GND
50	-	GND	GND
51	-	NU	Not Used
52	-	NU	Not Used
53	-	P-ON+5V	OSD Vcc
54	-	HLF	HLF
55	IN	V-HOLD	VHOLD
56	IN	CV-IN	Video Signal Input
57	-	GND	GND
58	IN	H-SYNC	H-SYNC Input
59	IN	V-SYNC	V-SYNC Input
60	OUT	OSD-BLK	Output for Picture Cut off
61	-	NU	Not Used
62	OUT	OSD-B	Blue Output
63	OUT	OSD-G	Green Output
64	OUT	OSD-R	Red Output
65	OUT	A-MUTE	Audio Mute Output
66	OUT	C-F/R	Capstan Motor FWD/REV Control Signal

Pin No.	IN/ OUT	Signal Name	Function
67	-	NU	Not Used
68	-	YCA-SOUT	YCA-SOUT Signal
69	-	YCA-CS	YCA-CS Signal
70	-	YCA-SCLK	YCA-SCLK Signal
71	OUT	SCL	E2PROM/CHROMA IC Tuner Communication Clock
72	IN/ OUT	SDA	E2PROM/CHROMA IC Tuner Communication Data
73	-	NU	Not Used
74	IN	C-SYNC	C-Sync Input
75	-	NU	Not Used
76	OUT	C-CONT	Capstan Motor Control Signal
77	OUT	D-CONT	Drum Motor Control Signal
78	-	NU	Not Used
79	-	NU	Not Used
80	IN	T-REEL	Take Up Reel Rotation Signal
81	-	NU	Not Used
82	OUT	LD-CONT	Loading Motor Control Signal
83	-	NU	Not Used
84	IN	P-DOWN	Power Voltage Down Detector Signal
85	-	NU	Not Used
86	-	GND	GND
87	IN	C-FG	Capstan Motor Rotation Detection Pulse
88	-	GND	GND (AMP)
89	-	NU	Not Used
90	IN	D-PFG	Drum Motor Pulse Generator
91	-	NU	Not Used
92	OUT	AMP VREF IN	Standard Voltage Input
93	-	C	C
94	IN/ OUT	CTL (-)	CTL (-)
95	IN/ OUT	CTL (+)	CTL (+)
96	-	AMPC	AMPC
97	OUT	CTL AMP OUT	Control Amp Output
98	-	P-ON+5V	Power Supply for AMP
99	-	AL+5V	A/D, D/A Standard Voltage
100	-	NU	Not Used

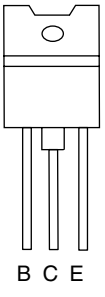
LEAD IDENTIFICATIONS

2SK3563



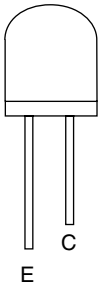
S: Souce
D: Drain
G: Gate

2SC5884000RF
TT2138LS-YB11

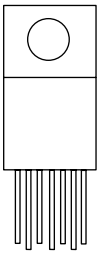


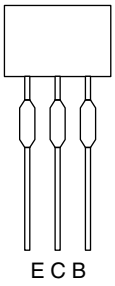
E: Emitter
C: Collector
B: Base

MID-32A22F
PT204-6B-12



LA78040A





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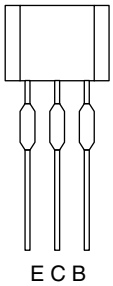
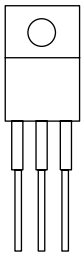
2SC2120-(O,Y)(TPE2)
2SC3331(T,U)
KRA103M
KTC3203(Y)



2SA1015-GR(TPE2)
2SA1175(F)
2SA950(O,Y)
2SC1627Y-TPE2
2SC2482 TPE6
2SC2785(F)
2SC3468(D,E)-AE
BN1F4M-T
KTA1267(GR)
KTA1271(Y)
KTC3199(GR)
KTC3207

LTV-817B-F
LTV-817C-F
PC817X6

KA7805A
KIA7805API



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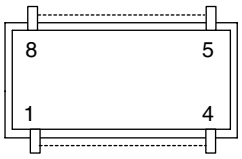

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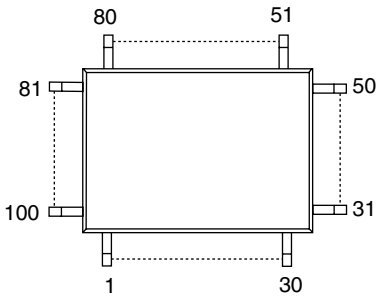
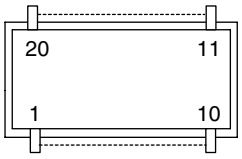
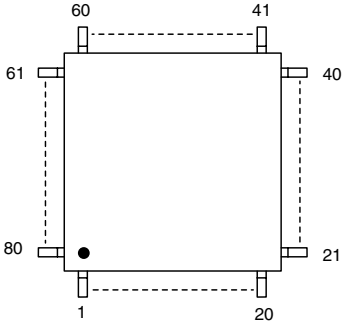


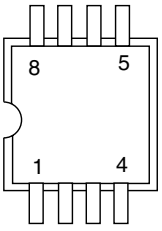
M61113FP



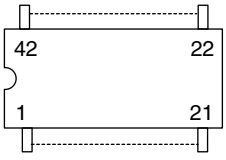
LA71205M-MPB-E



BR24C02F-W
CAT24WC02JI
M24C02-WMN6

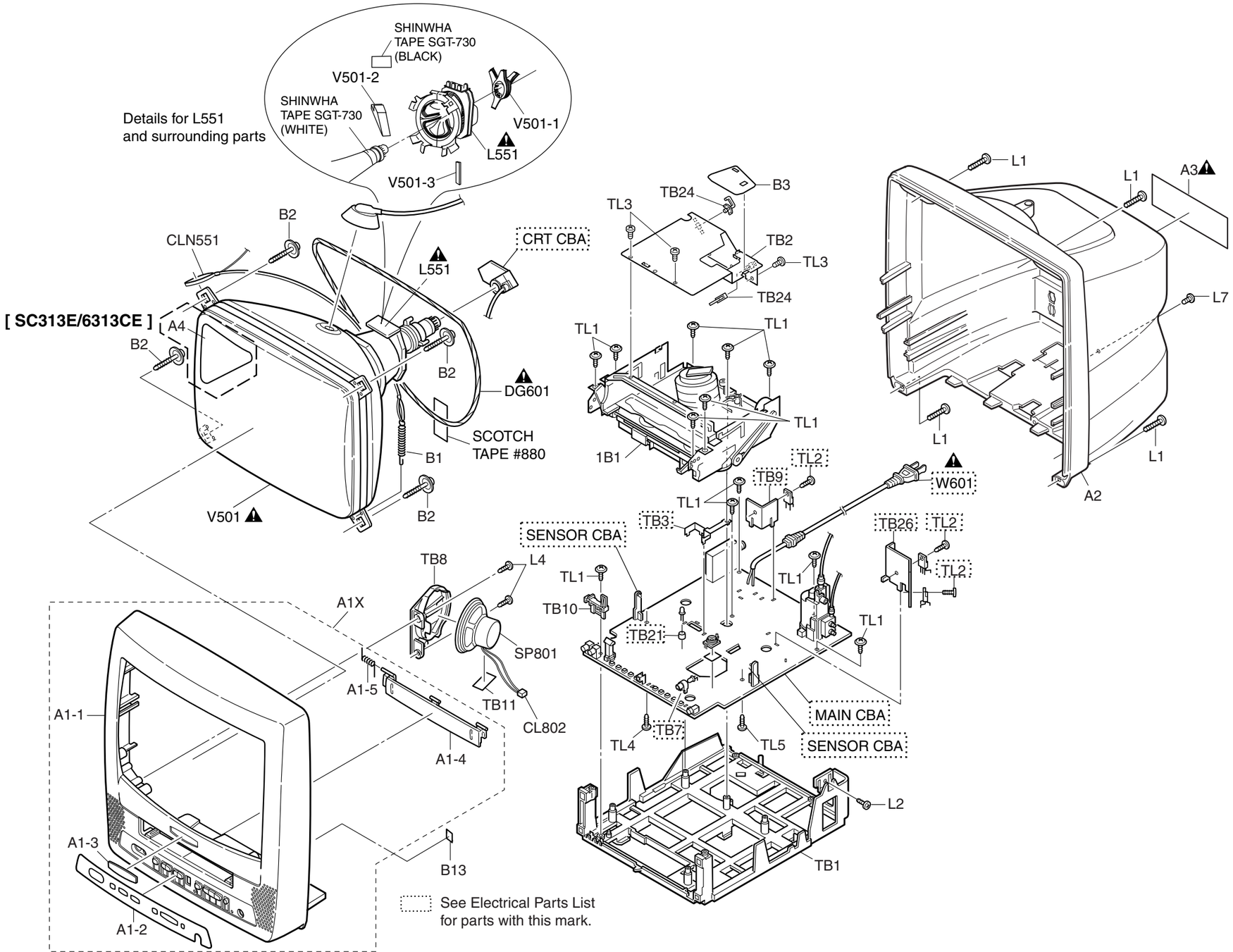


M61275FP-61

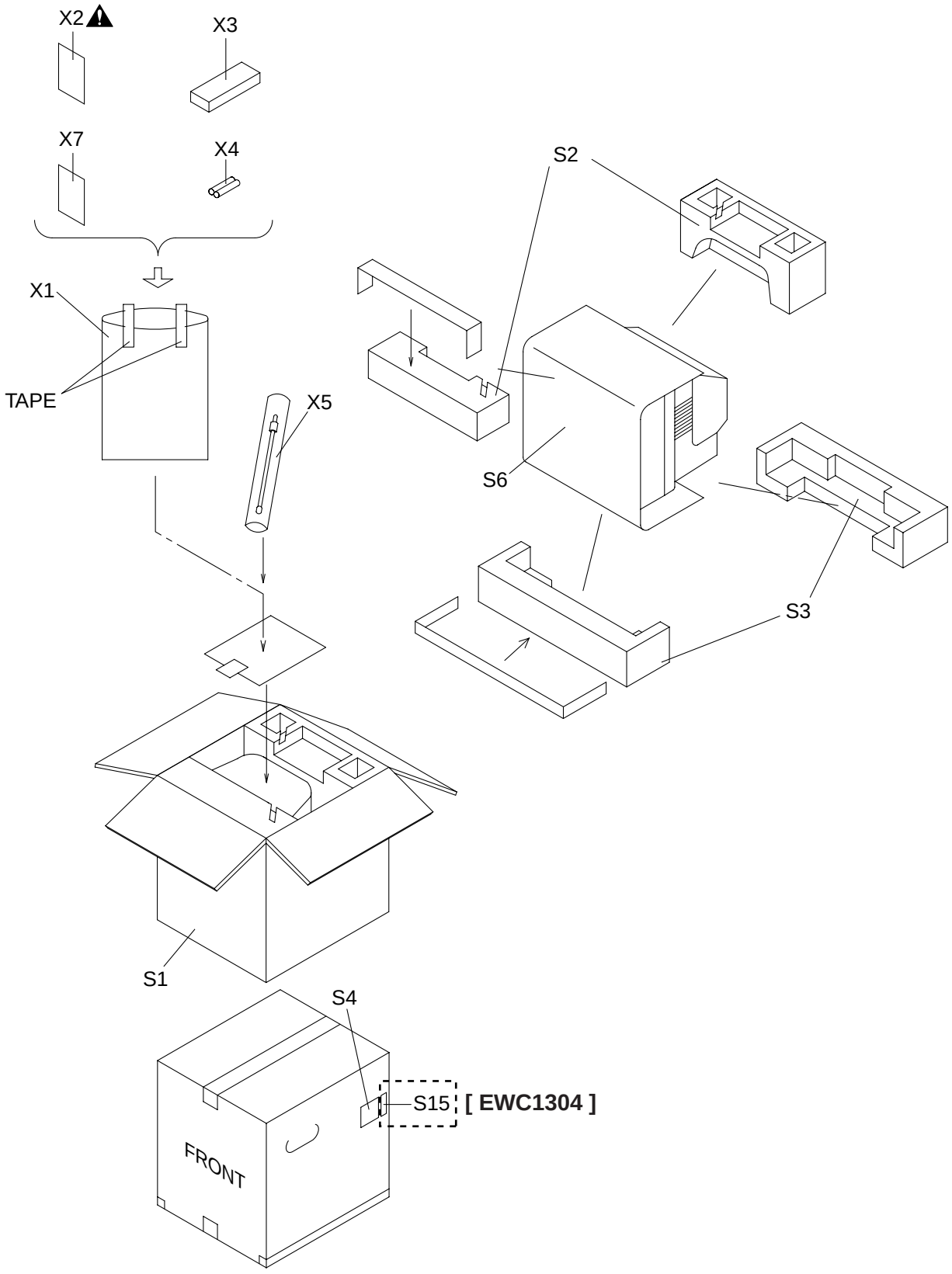


EXPLODED VIEWS

Cabinet



Packing



MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE:
Parts that are not assigned part numbers (---------) are not available.

Comparison Chart of Models and Marks

Model	Mark
EWC1304	A
SC313E	B
6313CE	C

Ref. No.	Mark	Description	Part No.
A1X	A	FRONT CABINET ASSEMBLY T5500UA	0EM101462
A1X	B	FRONT CABINET ASSEMBLY T5501UB	0EM101445
A1X	C	FRONT CABINET ASSEMBLY T5502UC	0EM101446
A1-1	A	FRONT CABINET T5303UD	0EM000603
A1-1	B	FRONT CABINET T5300UA	0EM000619
A1-1	C	FRONT CABINET T5302UC	0EM000620
A1-2	A	CONTROL PLATE T5500UA	0EM302081
A1-2	B	CONTROL PLATE T5501UB	0EM302052
A1-2	C	CONTROL PLATE T5502UC	0EM302053
A1-3	A	BRAND PLATE T5303UDEMERSON	0EM406919
A1-3	B	BRAND PLATE T5501UB:SYMPHONIC	0EM409083
A1-3	C	BRAND PLATE T5302UC:SYLVANIA	0EM406914
A1-4		CASSETTE DOOR T5303UD	0EM406915
A1-5		SPRING DOOR(Z10) T5200UA	0EM406687
A2		REAR CABINET T5400UA	0EM000691
A3⚠	A	RATING LABEL T5500UA	----------
A3⚠	B	RATING LABEL T5501UB	----------
A3⚠	C	RATING LABEL T5502UC	----------
A4	B	POP LABEL T5501UB	----------
A4	C	POP LABEL T5502UC	----------
1B1		DECK ASSEMBLY CZD013/VM2226	N2226FT
B1		SPRING TENSION B0080B0:EM40808	26WH006
B2		M5 CRT SCREW(B) B4000UA	0VM403923
B3		SHIELD PLATE T5500UA	0EM408707
B13		CLOTH(15X10XT0.5) L9700UA	0EM405038
CL802		WIRE ASSEMBLY 2P/150	WX1B5900-001
CLN551		CRT GND WIRE CRT GND	WX1L7720-001
DG601⚠		DEGAUSSING COIL F-019 or	LLBH00ZTM019
⚠		DEGAUSSING COIL AVDG016	LLBH00ZWR016
L1		SCREW, P-TIGHT 4X18 BIND HEAD +	GBMP4180
L2		SCREW TAPPING M4X14	DBU14140
L4		SCREW, P-TIGHT 3X10 BIND HEAD	GBUP3100
L7		SCREW, P-TIGHT 3X10 BIND HEAD+	GBKP3100
SP801		SPEAKER S08F02B or	DSD0808XQ010
		SPEAKER J-F097-C5	DSD0808DCP01
TB1		TRAY CHASSIS T5400UA	0EM000688
TB2		TOP SHIELD T5500UA	0EM201787
TB8		SPEAKER HOLDER T5100UA	0EM201157B
TB10		RCA HOLDER T5400UA	0EM407677
TB11		CLOTH(10X30XT:0.3) T5300UA	0EM407441
TB24		WIRE HOLDER T5400UA	0EM407678
TL1		SCREW, P-TIGHT 3X12 WASHER HEAD+	GCMP3120
TL3		SCREW, S-TIGHT 3X4 BIND HEAD+	GBMS3040
TL4		SCREW, B-TIGHT M3X8 BIND HEAD+	GBMB3080
TL5		SCREW, P-TIGHT M3X8 BIND HEAD+	GBCP3080
PACKING			
S1	A	CARTON T5500UA	0EM409029
S1	B	CARTON T5501UB	0EM408788
S1	C	CARTON T5502UC	0EM408910
S2		STYROFOAM TOP ASSEMBLY T5400UA	0EM407693
S3		STYROFOAM BOTTOM ASSEMBLY T5400UA	0EM407694
S4	A	SERIAL NO. LABEL T5500UA	----------
S4	B	SERIAL NO. LABEL T5501UB	----------
S4	C	SERIAL NO. LABEL T5502UC	----------
S6		SET SHEET B5506UG:800X1500	0EM402369
S15	A	LABEL, EAS(H3761UD) MAKER NO.ZLLFNSLE1	----------
ACCESSORIES			
X1		BAG POLYETHYLENE 235X365XT0.03	0EM408420
X2⚠	A	OWNERS MANUAL T5500UA	0EMN02399
X2⚠	B	OWNERS MANUAL T5501UB	0EMN02342
X2⚠	C	OWNERS MANUAL T5502UC	0EMN02373
X3	A	REMOTE CONTROL 512/ERC001/ N0162UD or	N0162UD
	A	REMOTE CONTROL 512/ERC001/ N0159UD	N0159UD
X3	B,C	REMOTE CONTROL 512/ERC001/ N0150UD or	N0150UD
	B,C	REMOTE CONTROL 512/ERC001/ N0107UD	N0107UD
X4		DRY BATTERY R6P UM3 or	XB0M451GH001
		DRY BATTERY R6P(AR)2PX or	XB0M451HU002
		DRY BATTERY R6P(AR)2P X ICI or	XB0M451HU003
		DRY BATTERY(SUNRISE) R6SSE/2S or	XB0M451MS002
		DRY BATTERY R6P/2S	XB0M451T0001
X5		ROD ANTENNA T5200UA or	0EMN01755
		ROD ANTENNA L7720UA:NTSC W/COO or	0EMN00673
		ROD ANTENNA T5000UA	0EMN01599
X7	A	SHEET RETURN STOP T4259UK	0EM406203A
X7	B	SHEET RETURN STOP L6100UA	0EM407076
X7	C	SHEET RETURN STOP L6101UB	0EM407077
Note: 1. V501 (CRT) HAS COUPLE OF SUBSTITUTIONAL PARTS AND EACH PARTS ALSO HAS MATCHING COMBINATION WITH L551. PLEASE SEE TABLE 1 FOR DETAILS OF MATCHING COMBINATION. 2. L551 (DEFLECTION YOKE) HAS MATCHING COMBINATION WITH V501. PLEASE SEE TABLE 1 FOR DETAILS OF MATCHING COMBINATION.			
CRT TYPE A			
L551⚠		DEFLECTION YOKE LLBY00ZSY005 or	LLBY00ZSY005
⚠		DEFLECTION YOKE KDY3GDA82X	LLBY00ZMS011
V501⚠		CRT A34AGT13X	TCRT190CP036
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
CRT TYPE B			
L551⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002

Ref. No.	Mark	Description	Part No.
⚠		DEFLECTION YOKE KDY3GCE83X	LLBY00ZMS027
V501⚠		CRT A34JQQ093X	TCRT190MS010
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
CRT TYPE C			
L551⚠		DEFLECTION YOKE KDY3GCE83X or	LLBY00ZMS027
⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE CDY-M1456S or	LLBY00ZQS008
⚠		DEFLECTION YOKE DSE1493FU(S)	LLBY00ZSM008
V501⚠		CRT A34KQW42X	TCRT190SM013
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
CRT TYPE D			
L551⚠		DEFLECTION YOKE CDY-M1422F	LLBY00ZQS001
V501⚠		CRT A34JLL90X(W)	TCRT190QS015
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
CRT TYPE E			
L551⚠		DEFLECTION YOKE CDY-M1455F or	LLBY00ZQS007
⚠		DEFLECTION YOKE LLBY00ZSY003 or	LLBY00ZSY003
⚠		DEFLECTION YOKE KDY3GD592X	LLBY00ZMS004
V501⚠		CRT A34LRQ90X(VW)	TCRT190P7003
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
CRT TYPE F			
L551⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE KDY3GCE83X or	LLBY00ZMS027
⚠		DEFLECTION YOKE CDY-M1456S	LLBY00ZQS008
V501⚠		CRT A34KPU02XX	TCRT190GS016
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001
CRT TYPE G			
L551⚠		DEFLECTION YOKE LLBY00ZSY002 or	LLBY00ZSY002
⚠		DEFLECTION YOKE KDY3GCE83X or	LLBY00ZMS027
⚠		DEFLECTION YOKE CDY-M1456S	LLBY00ZQS008
V501⚠		CRT A34JXV70X	TCRT190THA02
V501-1		C.P.MAGNET JH225-FN-00	XM04000BV003
V501-2		WEDGE FT-00110W or	XV10000T4001
		WEDGE DB25SR	XV10000D9001
V501-3		RUBBER MAGNET 20X10X1.2	XM05000BV001

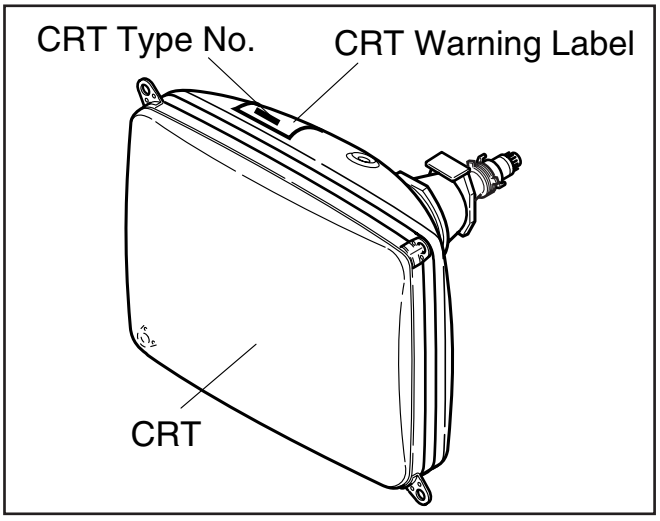
Table 1 (V501 and L551 Combination)

Note 1: Purity and Convergence Adjustments must be performed following CRT replacement. Refer to Electrical Adjustment Instructions.

Note 2: Please confirm CRT Type No. on the CRT Warning Label which is located on the CRT. Then See the Table 1 for V501 and L551 combination chart.
Please refer this CRT, Deflection Yoke combination chart for parts order.

V501: CRT Type No.	V501: CRT Part No.	L551: Deflection Yoke Part No.
A34AGT13X	TCRT190CP036	LLBY00ZSY005
		LLBY00ZMS011
A34JQQ093X	TCRT190MS010	LLBY00ZSY002
		LLBY00ZMS027
A34KQW42X	TCRT190SM013	LLBY00ZMS027
		LLBY00ZSY002
		LLBY00ZQS008
		LLBY00ZSM008
A34JLL90X(W)	TCRT190QS015	LLBY00ZQS001
A34LRQ90X(VW)	TCRT190P7003	LLBY00ZQS007
		LLBY00ZSY003
		LLBY00ZMS004
A34KPU02XX	TCRT190GS016	LLBY00ZSY002
		LLBY00ZMS027
		LLBY00ZQS008
A34JXV70X	TCRT190THA02	LLBY00ZSY002
		LLBY00ZMS027
		LLBY00ZQS008

CRT Warning Label Location



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTES:

1. Parts that are not assigned part numbers (---------) are not available.
2. Tolerance of Capacitors and Resistors are noted with the following symbols.

C.....±0.25%	D.....±0.5%	F.....±1%
G.....±2%	J.....±5%	K.....±10%
M.....±20%	N.....±30%	Z.....+80/-20%

MMA CBA

Ref. No.	Description	Part No.
	MMA CBA Consists of the following	0ESA05886
	MAIN CBA CRT CBA SENSOR CBA	---------- ---------- 0ESA06170

MAIN CBA

Ref. No.	Description	Part No.
	MAIN CBA Consists of the following	----------
	CAPACITORS	
C002	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C003	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C005	ELECTROLYTIC CAP. 220μF/6.3V M or	CE0KMASDL221
	ELECTROLYTIC CAP. 220μF/6.3V M	CE0KMASTL221
C007	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C008	ELECTROLYTIC CAP. 10μF/50V M H7	CE1JMAVSL100
C032	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C033	ELECTROLYTIC CAP. 470μF/10V M or	CE1AMASDL471
	ELECTROLYTIC CAP. 470μF/10V M	CE1AMASTL471
C036	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C037	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C039	ELECTROLYTIC CAP. 0.1μF/50V M H7	CE1JMAVSLR10
C042	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C043	CHIP CERAMIC CAP. F Z 0.022μF/50V	CHD1JZB0F223
C044	CERAMIC CAP.(AX) Y M 0.01μF/16V	CCA1CMT0Y103
C046	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C047	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C048	ELECTROLYTIC CAP. 10μF/50V M or	CE1JMASDL100
	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASTL100
C049	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C052	CHIP CERAMIC CAP. F Z 0.047μF/50V	CHD1JZB0F473
C053	FILM CAP.(P) 0.018μF/50V J	CA1J183MS029
C054	CERAMIC CAP.(AX) Y M 0.01μF/16V	CCA1CMT0Y103
C203	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C206	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C207	ELECTROLYTIC CAP.(SS.T) 47μF/25V M H7	CA1E470S6028
C208	ELECTROLYTIC CAP. 47μF/6.3V M H7	CE0KMAVSL470
C210	CHIP CERAMIC CAP. F Z 0.47μF/10V	CHD1AZB0F474
C211	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C212	CHIP CERAMIC CAP. CH J 22pF/50V	CHD1JJBCH220
C213	CHIP CERAMIC CAP. CH J 22pF/50V	CHD1JJBCH220
C214	ELECTROLYTIC CAP.(SS.T) 220μF/10V M H7	CA1A221S6028
C216	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C217	CHIP CERAMIC CAP.(MELF) SL D 10pF/50V	CZM1JDBSL100
C218	CHIP CERAMIC CAP. CH J 15pF/50V	CHD1JJBCH150
C219	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C220	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C221	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C222	CHIP CERAMIC CAP.(MELF) Y K 2200pF/35V	CZM1GKB0Y222
C223	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C224	CHIP CERAMIC CAP.(MELF) Y K 1000pF/35V	CZM1GKB0Y102
C225	CHIP CERAMIC CAP. CH J 560pF/50V	CHD1JJBCH561
C231	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C232	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C233	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C235	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JKB0B472
C236	CERAMIC CAP.(AX) F Z 0.047μF/16V	CCA1CZTFZ473
C238	CHIP CERAMIC CAP.(MELF) Y K 1000pF/35V	CZM1GKB0Y102
C239	ELECTROLYTIC CAP. 22μF/50V M or	CE1JMASDL220
	ELECTROLYTIC CAP. 22μF/50V M	CE1JMASTL220
C240	CERAMIC CAP.(AX) B J 560pF/50V	CCA1JJT0B561
C241	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JKB0B472
C242	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C243	ELECTROLYTIC CAP. 22μF/16V M LL or	CE1CMASLL220
	ELECTROLYTIC CAP. 22μF/16V M LL	CE1CMASLH220
C245	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C247	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C250	CERAMIC CAP.(AX) F Z 0.1μF/50V	CCA1JZTFZ104
C252	ELECTROLYTIC CAP.(SS.T) 100μF/16V M H7	CA1C101S6028
C253	ELECTROLYTIC CAP. 100μF/6.3V M or	CE0KMASDL101
	ELECTROLYTIC CAP. 100μF/6.3V M	CE0KMASTL101
C254	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	CE1GMASTL470
C257	CHIP CERAMIC CAP.(MELF) Y K 1000pF/35V	CZM1GKB0Y102
C265	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C266	CHIP CERAMIC CAP. CH J 100pF/50V	CHD1JJBCH101
C267	CERAMIC CAP.(AX) CH J 100pF/50V	CA1J101TU008
C301	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C302	CHIP CERAMIC CAP. CH J 33pF/50V	CHD1JJBCH330
C303	CHIP CERAMIC CAP. CH J 33pF/50V	CHD1JJBCH330
C304	CHIP CERAMIC CAP. CH J 33pF/50V	CHD1JJBCH330
C309	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C310	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C314	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C315	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C316	CHIP CERAMIC CAP. F Z 2.2μF/10V	CHD1AZB0F225
C317	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C319	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C320	CHIP CERAMIC CAP. F Z 0.47μF/10V	CHD1AZB0F474
C321	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C322	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103

Ref. No.	Description	Part No.
C323	CHIP CERAMIC CAP. F Z 2.2μF/10V	CHD1AZB0F225
C324	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C325	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C326	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C327	ELECTROLYTIC CAP. 100μF/10V M H7	CE1AMAVSL101
C330	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C331	ELECTROLYTIC CAP.(SS.T) 220μF/10V M H7	CA1A221S6028
C336	ELECTROLYTIC CAP. 1μF/50V H7(P=2.5MM)	CA1J1R0S6023
C337	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C338	CHIP CERAMIC CAP. F Z 2.2μF/10V	CHD1AZB0F225
C339	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C340	CHIP CERAMIC CAP. CH J 47pF/50V	CHD1JJBCH470
C342	ELECTROLYTIC CAP.(SS.T) 220μF/10V M H7	CA1A221S6028
C351	ELECTROLYTIC CAP.(SS.T) 220μF/10V M H7	CA1A221S6028
C352	ELECTROLYTIC CAP.(SS.T) 220μF/10V M H7	CA1A221S6028
C410	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C411	ELECTROLYTIC CAP. 100μF/10V M H7	CE1AMAVSL101
C412	CHIP CERAMIC CAP.(MELF) F Z 0.01μF/16V	CZM1CZB0F103
C413	CHIP CERAMIC CAP. CH J 390pF/50V	CHD1JJBCH391
C416	CHIP CERAMIC CAP.(MELF) SL J 100pF/50V	CZM1JJBSL101
C417	CHIP CERAMIC CAP.(MELF) SL J 100pF/50V	CZM1JJBSL101
C418	CHIP CERAMIC CAP. F Z 0.1μF/50V	CHD1JZB0F104
C419	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C420	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C421	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C422	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C423	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C424	ELECTROLYTIC CAP. 0.1μF/50V M H7	CE1JMAVSLR10
C425	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C426	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C427	CERAMIC CAP.(AX) B K 0.01μF/50V	CA1J103TU011
C428	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C429	ELECTROLYTIC CAP. 47μF/6.3V M H7	CE0KMAVSL470
C430	CHIP CERAMIC CAP. B K 0.022μF/50V	CHD1JKB0B223
C431	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C432	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C435	ELECTROLYTIC CAP. 1μF/50V M H7	CE1JMAVSL1R0
C436	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C438	CHIP CERAMIC CAP. F Z 1μF/10V	CHD1AZB0F105
C439	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C441	CHIP CERAMIC CAP. F Z 0.047μF/50V	CHD1JZB0F473
C442	CHIP CERAMIC CAP. F Z 0.1μF/50V	CHD1JZB0F104
C443	CHIP CERAMIC CAP. F Z 0.047μF/50V	CHD1JZB0F473
C444	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C445	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C447	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C449	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C552	MYLAR CAP. 0.22μF/50V J or	CMA1JJS00224
	FILM CAP.(P) 0.22μF/50V J or	CA1J224MS029
	TF CAP. 0.22μF/50V J	CT1J224MS045
C553	ELECTROLYTIC CAP. 1μF/50V LL or	CE1JMASLH1R0
	ELECTROLYTIC CAP. 1μF/50V M LL or	CE1JMASLL1R0
	ELECTROLYTIC CAP. 1μF/50V M LL	CE1JMASLL010
C555	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	CE1GMASTL470
C556	ELECTROLYTIC CAP. 1000μF/25V M or	CE1EMZPDL102
	ELECTROLYTIC CAP. 1000μF/25V M	CE1EMZPTL102
C558	CERAMIC CAP.(AX) B K 0.01μF/50V	CA1J103TU011
C559	ELECTROLYTIC CAP. 330μF/35V M or	CE1GMASDL331
	ELECTROLYTIC CAP. 330μF/35V M	CE1GMASTL331
C560	FILM CAP.(P) 0.01μF/100V J	CMA2AJS00103

Ref. No.	Description	Part No.
C572⚠	P.P. CAP 0.33μF/200V J or	CA2D334VC012
⚠	PP CAP. 0.33μF/250V J	CT2E334MS041
C574⚠	ELECTROLYTIC CAP. 4.7μF/250V M or	CE2EMASDL4R7
⚠	ELECTROLYTIC CAP. 4.7μF/250V M	CE2EMASTL4R7
C577	FILM CAP.(P) 0.022μF/50V J or	CMA1JJS00223
	FILM CAP.(P) 0.022μF/50V J	CA1J223MS029
C578	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	CE1GMASTL470
C580⚠	P.P. CAP 0.0082μF/1.6K J or	CA3C822VC011
⚠	PP CAP. 0.0082μF/1.6KV J or	CT3C822MS039
⚠	METALLIZED FILM CAP. 0.0082μF/1.6KV J or	CT3C822F7004
⚠	POLYPROPYLENE FILM CAP. 0.0082μF/1.6KV	CT3C822HJE16
C584⚠	ELECTROLYTIC CAP. 1μF/160V M or	CE2CMASDL1R0
⚠	ELECTROLYTIC CAP. 1μF/160V M	CE2CMASTL010
C591	ELECTROLYTIC CAP. 2.2μF/50V M H7	CE1JMAVSL2R2
C592	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C593	ELECTROLYTIC CAP. 2.2μF/50V M	CE1JMASDL2R2
	ELECTROLYTIC CAP. 2.2μF/50V M	CE1JMASTL2R2
C594	ELECTROLYTIC CAP. 10μF/160V M or	CE2CMZPDL100
	ELECTROLYTIC CAP. 10μF/160V M	CE2CMZNTL100
C602⚠	SAFETY CAP. 4700pF/250V KX	CA2E472MR050
C605⚠	METALLIZED FILM CAP. 0.1μF/250V or	CT2E104MS037
⚠	FILM CAP.(MP) 0.1μF/250V K or	CT2E104DC011
⚠	METALLIZED FILM CAP. 0.1μF/275V K	CT2E104HJE06
C606	CERAMIC CAP. F Z 0.01μF/500V or	CCD2JZP0F103
	CERAMIC CAP. 0.01μF/AC250V or	CCD2EZA0F103
	CERAMIC CAP. E Z 0.01μF/500V	CCD2JZP0E103
C607	CERAMIC CAP. F Z 0.01μF/500V or	CCD2JZP0F103
	CERAMIC CAP. 0.01μF/AC250V or	CCD2EZA0F103
	CERAMIC CAP. E Z 0.01μF/500V	CCD2JZP0E103
C610⚠	ELECTROLYTIC CAPACIT0R 150μF/200V or	CA2D151S6012
⚠	ALMINIUM ELECTROLYTIC CAP150μF/200V	CA2D151NC088
C611	CERAMIC CAP. BN 680pF/2KV or	CCD3DKA0B681
	CERAMIC CAP. 680pF/2KV or	CA3D681PAN04
	CERAMIC CAP. RB 680pF/2KV	CA3D681TE006
C612	FILM CAP.(P) 0.039μF/50V J or	CMA1JJS00393
	FILM CAP.(P) 0.039μF/50V J	CA1J393MS029
C613	FILM CAP.(P) 0.001μF/50V J or	CMA1JJS00102
	FILM CAP.(P) 0.001μF/50V J	CA1J102MS029
C614⚠	FILM CAP.(P) 0.056μF/50V J or	CMA1JJS00563
⚠	FILM CAP.(P) 0.056μF/50V J	CA1J563MS029
C615	CERAMIC CAP. BN 560pF/2KV or	CCD3DKA0B561
	CERAMIC CAP. 560pF/2KV or	CA3D561PAN04
	CERAMIC CAP. RB 560pF/2KV	CA3D561TE006
C616⚠	ELECTROLYTIC CAP. 100μF/160V M or	CE2CMZPDL101
⚠	ELECTROLYTIC CAP. 100μF/160V M or	CE2CMZPTL101
⚠	ELECTROLYTIC CAP. 100μF/160V M W/F	CE2CMZNTL101
C617⚠	ELECTROLYTIC CAP. 470μF/35V M or	CE1GMASDL471
⚠	ELECTROLYTIC CAP. 470μF/35V M	CE1GMASTL471
C618⚠	ELECTROLYTIC CAP. 1000μF/16V M or	CE1CMZPDL102
⚠	ELECTROLYTIC CAP. 1000μF/16V M	CE1CMZPTL102
C619	ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C620⚠	ELECTROLYTIC CAP. 1000μF/16V M or	CE1CMZPDL102
⚠	ELECTROLYTIC CAP. 1000μF/16V M	CE1CMZPTL102
C622	CERAMIC CAP.(AX) CH J 100pF/50V	CA1J101TU008
C623	FILM CAP.(P) 0.01μF/50V J or	CMA1JJS00103
	FILM CAP.(P) 0.01μF/50V J	CA1J103MS029
C624	CERAMIC CAP.(AX) B K 0.01μF/50V	CA1J103TU011
C625	ELECTROLYTIC CAP. 3.3μF/50V M or	CE1JMASDL3R3
	ELECTROLYTIC CAP. 3.3μF/50V M	CE1JMASTL3R3

Ref. No.	Description	Part No.
C626	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C627	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	CE1GMASTL470
C628	ELECTROLYTIC CAP. 10μF/50V M or	CE1JMASDL100
	ELECTROLYTIC CAP. 10μF/50V M	CE1JMASTL100
C629	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	CE1GMASTL470
C630	ELECTROLYTIC CAP. 100μF/10V M or	CE1AMASDL101
	ELECTROLYTIC CAP. 100μF/10V M	CE1AMASTL101
C631	ELECTROLYTIC CAP. 220μF/6.3V M or	CE0KMASDL221
	ELECTROLYTIC CAP. 220μF/6.3V M	CE0KMASTL221
C632	ELECTROLYTIC CAP. 100μF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASTL101
C633	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	CE1GMASTL470
C634	ELECTROLYTIC CAP. 100μF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100μF/16V M	CE1CMASTL101
C635	ELECTROLYTIC CAP. 47μF/16V M H7	CE1CMAVSL470
C636	CHIP CERAMIC CAP. F Z 0.1μF/50V	CHD1JZB0F104
C639	CERAMIC CAP. B K 2200pF/500V	CCD2JKS0B222
C648	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C650	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASDL470
	ELECTROLYTIC CAP. 47μF/25V M	CE1EMASTL470
C801	ELECTROLYTIC CAP. 220μF/16V M or	CE1CMASDL221
	ELECTROLYTIC CAP. 220μF/16V M	CE1CMASTL221
C802	ELECTROLYTIC CAP. 470μF/16V M or	CE1CMASDL471
	ELECTROLYTIC CAP. 470μF/16V M	CE1CMASTL471
C803	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C804	ELECTROLYTIC CAP. 0.22μF/50V M H7	CE1JMAVSLR22
C805	CHIP CERAMIC CAP. B K 4700pF/50V	CHD1JKB0B472
C852	ELECTROLYTIC CAP. 33μF/16V M H7	CE1CMAVSL330
C853	CHIP CERAMIC CAP. F Z 0.1μF/50V	CHD1JZB0F104
C854	ELECTROLYTIC CAP. 22μF/16V M H7	CE1CMAVSL220
C856	CHIP CERAMIC CAP. F Z 0.1μF/50V	CHD1JZB0F104
C858	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C861	CHIP CERAMIC CAP. CH J 820pF/50V	CHD1JJBCH821
C862	CHIP CERAMIC CAP. B K 0.015μF/50V	CHD1JKB0B153
C863	ELECTROLYTIC CAP. 4.7μF/50V M H7	CE1JMAVSL4R7
C865	CHIP CERAMIC CAP. B K 0.01μF/50V	CHD1JKB0B103
C866	CHIP CERAMIC CAP. B K 2700pF/50V	CHD1JKB0B272
C867	CHIP CERAMIC CAP. B K 1000pF/50V	CHD1JKB0B102
C872	ELECTROLYTIC CAP. 220μF/6.3V M H7	CE0KMAVSL221
C873	ELECTROLYTIC CAP.(SS.T) 100μF/16V M H7	CA1C101S6028
C874	CERAMIC CAP. B K 470pF/100V or	CCD2AKS0B471
	CERAMIC CAP. B K 470pF/500V	CCD2JKS0B471
C875	FILM CAP.(P) 0.018μF/100V J or	CMA2AJS00183
	FILM CAP.(P) 0.018μF/50V J	CA1J183MS029
	CONNECTORS	
CN571	CONNECTOR BASE, 5P TV-50P-05-V3 or	J3TVC05TG002
	CONNECTOR BASE, 5P RTB-1.5-5P	J3RTC05JG001
CN601	CONNECTOR BASE, 2P TV-50P-02-V3 or	J3TVC02TG002
	CONNECTOR BASE, 2P RTB-1.5-2P	J3RTC02JG001
CN801	STRAIGHT CONNECTOR BASE 00 8283 0212 00 000 or	J383C02UG002
	STRAIGHT PIN HEADER, 2P 173981-2	1770258
	DIODES	
D031	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D203	LED SIR-563ST3F P or	QPQPS1R563ST
	LED SIR-563ST3F Q or	QPQQS1R563ST
	LED MIE-534A2	NPZZM1E534A2

Ref. No.	Description	Part No.
D204	LED LTL-4214M1 or	NPQZLTL4214M
	LED LAMP 333HT/F45-50K or	NPWK333HTF45
	LED LAMP 333HT/F45-50L or	NPWL333HTF45
	LED LAMP 333HT/F45-50M	NPWM333HTF45
D208	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D225	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D226	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
D227	PCB JUMPER D0.6-P5.0	JW5.0T
D231	ZENER DIODE MTZJT-775.6B or	QDTB0MTZJ5R6
	ZENER DIODE DZ-5.6BSBT265	NDTB0DZ5R6BS
D251	ZENER DIODE MTZJT-7715B or	QDTB00MTZJ15
	ZENER DIODE DZ-15BSBT265	NDTB00DZ15BS
D254	ZENER DIODE MTZJT-7718A or	QDTA00MTZJ18
	ZENER DIODE DZ-18BSAT265	NDTA00DZ18BS
D302	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D303	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D304	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D305	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D306	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D309	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D311	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D312	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D313	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D314	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D315	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D401	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D552	DIODE 1N5397-B or	NDLZ001N5397
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D571⚠	DIODE FR154 or	NDLZ000FR154
⚠	FAST RECOVERY DIODE ERB44-02	QDPZ0ERB4402
D572⚠	DIODE FR104-B	NDLZ000FR104
D584	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D585	ZENER DIODE MTZJT-775.1B or	QDTB0MTZJ5R1
	ZENER DIODE DZ-5.1BSBT265	NDTB0DZ5R1BS
D591⚠	ZENER DIODE MTZJT-7736B or	QDTB00MTZJ36
⚠	ZENER DIODE DZ-36BSBT265	NDTB00DZ36BS
D595	ZENER DIODE MTZJT-7718B or	QDTB00MTZJ18
	ZENER DIODE DZ-18BSBT265	NDTB00DZ18BS
D596	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D597	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D598⚠	DIODE FR104-B	NDLZ000FR104
D603	DIODE 1N5397-B or	NDLZ001N5397
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206

Ref. No.	Description	Part No.
D604	DIODE 1N5397-B or	NDLZ001N5397
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D605	DIODE 1N5397-B or	NDLZ001N5397
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D606	DIODE 1N5397-B or	NDLZ001N5397
	RECTIFIER DIODE ERB12-06	QDQZ0ERB1206
D607⚠	ZENER DIODE MTZJT-7720C or	QDTC00MTZJ20
⚠	ZENER DIODE DZ-20BSCT265	NDTC00DZ20BS
D609	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D610	ZENER DIODE MTZJT-775.6B or	QDTB0MTZJ5R6
	ZENER DIODE DZ-5.6BSBT265	NDTB0DZ5R6BS
D611	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D613⚠	RECTIFIER DIODE 15DF4 or	QDQZ00015DF4
⚠	RECOVERY DIODE ERC18-04	QDZZ0ERC1804
D614⚠	DIODE FR104-B	NDLZ000FR104
D615⚠	DIODE 1ZC33 or	QDQZ0001ZC33
⚠	ZENER DIODE RD33FB	QDQZ000RD33F
D616⚠	SCHOTTKY BARRIER DIODE 21DQ04 or	QDQZ0021DQ04
⚠	SCHOTTKY BARRIER DIODE ERB81-004	AERB81004***
D617⚠	SCHOTTKY BARRIER DIODE 11EQS04 or	QD4Z011EQS04
⚠	SCHOTTKY BARRIER DIODE ERA81-004	QDPZERA81004
D618⚠	SCHOTTKY BARRIER DIODE 11EQS04 or	QD4Z011EQS04
⚠	SCHOTTKY BARRIER DIODE ERA81-004	QDPZERA81004
D619	DIODE FR104-B	NDLZ000FR104
D620⚠	ZENER DIODE MTZJT-776.8B or	QDTB0MTZJ6R8
⚠	ZENER DIODE DZ-6.8BSBT265	NDTB0DZ6R8BS
D621	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D622	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D623	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D625	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
D626	ZENER DIODE MTZJT-7736A or	QDTA00MTZJ36
	ZENER DIODE DZ-36BSAT265	NDTA00DZ36BS
D627⚠	ZENER DIODE MTZJT-7713B or	QDTB00MTZJ13
⚠	ZENER DIODE DZ-13BSBT265	NDTB00DZ13BS
D628	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D629	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D631	ZENER DIODE MTZJT-776.8A or	QDTA0MTZJ6R8
	ZENER DIODE DZ-6.8BSAT265	NDTA0DZ6R8BS
D632	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D633	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D634	ZENER DIODE MTZJT-778.2B or	QDTB0MTZJ8R2
	ZENER DIODE DZ-8.2BSBT265	NDTB0DZ8R2BS
D635	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D636	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D638	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D639	SCHOTTKY BARRIER DIODE 11EQS04	QD4Z011EQS04
	SCHOTTKY BARRIER DIODE ERA81-004	QDPZERA81004
D640	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148

Ref. No.	Description	Part No.
D641⚠	ZENER DIODE MTZJT-7736A or	QDTA00MTZJ36
⚠	ZENER DIODE DZ-36BSAT265	NDTA00DZ36BS
D643	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D646	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D801	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D802	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D803	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D964	SWITCHING DIODE 1SS133(T-77) or	QDTZ001SS133
	SWITCHING DIODE 1N4148	NDTZ001N4148
D965	ZENER DIODE MTZJT-776.2B or	QDTB0MTZJ6R2
	ZENER DIODE DZ-6.2BSBT265	NDTB0DZ6R2BS
ICS		
IC001	IC:VIF/SIF M61113FP	QSZBA0SHT019
IC201⚠	MICRO COMPUTER M37762M8A-8D4GP	QSZAA0RHT013
IC202	IC:MEMORY BR24C02F-W or	QSMBA0SRM003
	IC:EEPROM CAT24WC02JI or	NSZBA0SBG001
	IC(EEP-ROM) M24C02-WMN6	NSZAA0SSS004
IC301	MICRO-COMPUTER/VCD M61275FP-61	QSZAB0RMB133
IC401	IC:Y/C/A LA71205M-MPB-E	QSZBA0RSY037
IC551⚠	VERTICAL OUTPUT IC LA78040A	QSBBA0SSY003
IC601⚠	PHOTOCOUPLER LTV-817B-F or	NPEB0LTV817F
⚠	PHOTOCOUPLER LTV-817C-F or	NPEC0LTV817F
⚠	PHOTO COUPLER PC817X6	QPE600PC817X
IC602⚠	VOLTAGE REGULATOR KIA7805API or	NSBBA0SJY011
⚠	VOLTAGE REGULATOR KA7805A	NSZBA0SF3052
IC801	AUDIO AMP IC AN17811A	QSZAA0SMS015
COILS		
L001	PCB JUMPER D0.6-P5.0	JW5.0T
L031	PCB JUMPER D0.6-P5.0	JW5.0T
L033	INDUCTOR 15μH-J-26T or	LLAXJATTU150
	INDUCTOR 15μH-K-26T	LLAXKDTKA150
L041	PCB JUMPER D0.6-P5.0	JW5.0T
L202	INDUCTOR 0.10μH-K-26T	LLAXKATTUR10
L211⚠	CHOKE COIL 47μH-K or	LLBD00PKV007
⚠	CHOKE COIL 47μH-K	LLBD00PKV005
L302	PCB JUMPER D0.6-P5.0	JW5.0T
L303	PCB JUMPER D0.6-P5.0	JW5.0T
L402	INDUCTOR 22μH-J-26T or	LLAXJATTU220
	INDUCTOR 22μH-K-26T	LLAXKDTKA220
L403	CHOKE COIL 47μH-K or	LLBD00PKV007
	CHOKE COIL 47μH-K	LLBD00PKV005
L404	CHOKE COIL 47μH-K or	LLBD00PKV007
	CHOKE COIL 47μH-K	LLBD00PKV005
L601⚠	LINE FILTER SA-91213B or	LLBG00ZSA002
⚠	LINE FILTER 5.0MH 6Y075	LLBG00ZKT004
L601	LINE FILTER UU10.5-A	LLBG00ZY2008
L871	PCB JUMPER D0.6-P5.0	JW5.0T
L872	INDUCTOR 47μH-K-5FT or	LLARKBSTU470
	INDUCTOR 47μH-K-5FT	LLARKDSKA470
TRANSISTORS		
Q205	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q206	PHOTO TRANSISTOR MID-32A22F or	NPWZ1D32A22F
	PHOTO TRANSISTOR PT204-6B-12	NPWZT2046B12

Ref. No.	Description	Part No.
Q401	TRANSISTOR 2SA1175(F) or	QQSF02SA1175
	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
Q402	TRANSISTOR 2SA1175(F) or	QQSF02SA1175
	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
Q571⚠	TRANSISTOR TT2138LS-YB11 or	QQZZ00TT2138
⚠	TRANSISTOR 2SC5884000RF	QQZZ02SC5884
Q572	TRANSISTOR 2SC1627Y-TPE2	QQSY02SC1627
Q591⚠	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
⚠	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
⚠	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q601⚠	MOS FET 2SK3563	QFWZ02SK3563
Q602⚠	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
⚠	TRANSISTOR 2SC2120-Y(TPE2)	QQSY02SC2120
Q604	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q605	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q606⚠	TRANSISTOR 2SA950(O) or	Q2SA9500TPE2
⚠	TRANSISTOR 2SA950(Y) or	Q2SA950YTPE2
⚠	TRANSISTOR KTA1271(Y)	NQSY0KTA1271
Q607	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q608⚠	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
⚠	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
⚠	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q609	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q610	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q611	TRANSISTOR 2SC2785(F) or	QQSF02SC2785
	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q612	RES. BUILT-IN TRANSISTOR KRA103M or	NQSZ0KRA103M
	RES. BUILT-IN TRANSISTOR BN1F4M-T	QQSZ00BN1F4M
Q613	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q871	TRANSISTOR 2SA1175(F) or	QQSF02SA1175
	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR 2SA1015-GR(TPE2)	QQS102SA1015
Q872	TRANSISTOR 2SC2120-O-TPE2 or	QQS002SC2120
	TRANSISTOR 2SC2120-Y(TPE2) or	QQSY02SC2120
	TRANSISTOR KTC3203(Y)	NQSY0KTC3203
Q873	TRANSISTOR 2SC3331(T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331(U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q874	TRANSISTOR 2SC3331(T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331(U) or	QSC3331UNPAA
	TRANSISTOR 2SC1815-GR(TPE2)	QQS102SC1815
Q875	RES. BUILT-IN TRANSISTOR KRA103M or	NQSZ0KRA103M
	RES. BUILT-IN TRANSISTOR BN1F4M-T	QQSZ00BN1F4M
	RESISTORS	
R002	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101

Ref. No.	Description	Part No.
R003	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R032	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R033	CHIP RES.(1608) 1/10W J 390k Ω	RRXAJB5Z0394
R034	CHIP RES.(1608) 1/10W J 150 Ω	RRXAJB5Z0151
R035	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJB5Z0224
R036	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJB5Z0224
R037	CHIP RES.(1608) 1/10W J 180 Ω	RRXAJB5Z0181
R038	CHIP RES.(1608) 1/10W J 150 Ω	RRXAJB5Z0151
R039	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R040	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R041	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJB5Z0183
R042	CARBON RES. 1/4W J 3.9k Ω	RCX4JATZ0392
R201	CARBON RES. 1/4W G 4.7k Ω	RCX4GATZ0472
R202	CHIP RES. 1/10W F 22k Ω or	RRXAFB5J2202
	CHIP RES.(1608) 1/10W F 22k Ω	RRXAFB5H2202
R203	CHIP RES. 1/10W F 470 Ω or	RRXAFB5J4700
	CHIP RES.(1608) 1/10W F 470 Ω	RRXAFB5H4700
R204	CHIP RES. 1/10W F 1.5k Ω or	RRXAFB5J1501
	CHIP RES.(1608) 1/10W F 1.5k Ω	RRXAFB5H1501
R205	CHIP RES. 1/10W F 3.6k Ω or	RRXAFB5J3601
	CHIP RES.(1608) 1/10W F 3.6k Ω	RRXAFB5H3601
R206	CHIP RES. 1/10W F 10k Ω or	RRXAFB5J1002
	CHIP RES.(1608) 1/10W F 10k Ω	RRXAFB5H1002
R208	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R209	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R210	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R211	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R212	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R213	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R214	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R215	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R216	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R217	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R218	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R219	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R220	CHIP RES.(1608) 1/10W J 390k Ω	RRXAJB5Z0394
R221	PCB JUMPER D0.6-P5.0	JW5.0T
R222	CHIP RES.(1608) 1/10W J 270k Ω	RRXAJB5Z0274
R223	CHIP RES.(1608) 1/10W J 560 Ω	RRXAJB5Z0561
R224	CHIP RES.(1608) 1/10W J 47k Ω	RRXAJB5Z0473
R225	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R226	CHIP RES.(1608) 1/10W J 33k Ω	RRXAJB5Z0333
R227	CARBON RES. 1/4W J 270 Ω	RCX4JATZ0271
R229	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJB5Z0331
R232	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R233	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R234	CHIP RES.(1608) 1/10W J 1.2k Ω	RRXAJB5Z0122
R235	CHIP RES.(1608) 1/10W J 47 Ω	RRXAJB5Z0470
R236	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104
R237	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R238	CHIP RES.(1608) 1/10W J 470k Ω	RRXAJB5Z0474
R239	CHIP RES.(1608) 1/10W J 2.7k Ω	RRXAJB5Z0272
R240	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R241	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R243	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R244	CHIP RES.(1608) 1/10W J 1M Ω	RRXAJB5Z0105
R245	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJB5Z0471
R247	CHIP RES.(1608) 1/10W J 820 Ω	RRXAJB5Z0821
R248	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJB5Z0471
R249	CARBON RES. 1/4W J 3.3k Ω	RCX4JATZ0332
R250	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152

Ref. No.	Description	Part No.
R251	CHIP RES.(1608) 1/10W J 3.3k Ω	RRXAJB5Z0332
R252	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R253	CARBON RES. 1/4W J 3.3k Ω	RCX4JATZ0332
R254	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R255	PCB JUMPER D0.6-P5.0	JW5.0T
R256	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R257	PCB JUMPER D0.6-P5.0	JW5.0T
R258	PCB JUMPER D0.6-P5.0	JW5.0T
R259	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R260	PCB JUMPER D0.6-P5.0	JW5.0T
R262	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJB5Z0224
R263	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJB5Z0393
R267	CHIP RES.(1608) 1/10W J 82k Ω	RRXAJB5Z0823
R269	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R270	CHIP RES.(1608) 1/10W J 220k Ω	RRXAJB5Z0224
R273	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJB5Z0182
R274	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R275	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R278	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R279	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R283	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
R291	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R292	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R301	CARBON RES. 1/4W J 330 Ω	RCX4JATZ0331
R303	CARBON RES. 1/4W J 330 Ω	RCX4JATZ0331
R305	CARBON RES. 1/4W J 330 Ω	RCX4JATZ0331
R308	CARBON RES. 1/4W J 120k Ω	RCX4JATZ0124
R310	CHIP RES.(1608) 1/10W J 180k Ω	RRXAJB5Z0184
R312	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R314	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R315	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R316	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJB5Z0822
R329	CHIP RES.(1608) 1/10W J 15k Ω	RRXAJB5Z0153
R331	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R332	CARBON RES. 1/2W J 39 Ω or	RCX2JZQZ0390
	CARBON RES. 1/2W J 39 Ω	RCX2390KA013
R333	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R334	CHIP RES.(1608) 1/10W J 56k Ω	RRXAJB5Z0563
R335	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R336	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R337	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJB5Z0471
R338	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJB5Z0183
R339	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R340	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R405	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R406	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R407	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJB5Z0183
R408	CHIP RES.(1608) 1/10W J 18k Ω	RRXAJB5Z0183
R409	CHIP RES.(1608) 1/10W J 39k Ω	RRXAJB5Z0393
R410	CHIP RES.(1608) 1/10W J 3.3k Ω	RRXAJB5Z0332
R414	CHIP RES.(1608) 1/10W J 47k Ω	RRXAJB5Z0473
R415	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R417	CHIP RES.(1608) 1/10W J 220 Ω	RRXAJB5Z0221
R418	CHIP RES.(1608) 1/10W J 330 Ω	RRXAJB5Z0331
R419	CARBON RES. 1/4W J 330 Ω	RCX4JATZ0331
R423	CHIP RES.(1608) 1/10W J 3.9M Ω	RRXAJB5Z0395
R424	CHIP RES.(1608) 1/10W J 100k Ω	RRXAJB5Z0104
R425	CHIP RES.(1608) 1/10W J 82k Ω	RRXAJB5Z0823
R426	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R427	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R428	CHIP RES.(1608) 1/10W J 680k Ω	RRXAJB5Z0684

Ref. No.	Description	Part No.
R429	CHIP RES.(1608) 1/10W J 1.2k Ω	RRXAJB5Z0122
R431	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJB5Z0822
R432	CHIP RES.(1608) 1/10W J 1.8k Ω	RRXAJB5Z0182
R544	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R551	CHIP RES.(1608) 1/10W J 1.5k Ω	RRXAJB5Z0152
R552⚠	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R556	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R557	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471
R558	CARBON RES. 1/4W J 22k Ω	RCX4JATZ0223
R559	CARBON RES. 1/4W J 3.3k Ω	RCX4JATZ0332
R560	CARBON RES. 1/4W J 10k Ω	RCX4JATZ0103
R561	CARBON RES. 1/4W J 8.2k Ω	RCX4JATZ0822
R562	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R563	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R565	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R566	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R570	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R571	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R573	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471
R574⚠	METAL OXIDE FILM RES. 2W J 1k Ω or	RN02102ZU001
⚠	METAL OXIDE FILM RES. 2W J 1k Ω	RN02102DP004
R575⚠	METAL OXIDE FILM RES. 2W J 1k Ω or	RN02102ZU001
⚠	METAL OXIDE FILM RES. 2W J 1k Ω	RN02102DP004
R576	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R577	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R578	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R579	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R580	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R581	CARBON RES. 1/4W J 56 Ω	RCX4JATZ0560
R583⚠	METAL OXIDE FILM RES. 1W J 2.2 Ω or	RN012R2ZU001
⚠	METAL OXIDE FILM RES. 1W J 2.2 Ω	RN012R2DP003
R584	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R587⚠	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R588	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R590	METAL OXIDE FILM RES. 1W J 3.3k Ω or	RN01332ZU001
	METAL OXIDE FILM RES. 1W J 3.3k Ω	RN01332DP003
R592⚠	CARBON RES. 1/4W J 180k Ω	RCX4JATZ0184
R593	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R594	CHIP RES.(1608) 1/10W J 56k Ω	RRXAJB5Z0563
R595	CARBON RES. 1/4W J 15k Ω	RCX4JATZ0153
R596	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R597	CHIP RES.(1608) 1/10W J 470 Ω	RRXAJB5Z0471
R598	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R599	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R602⚠	CEMENT RES. 3W K 1.2 Ω or	RW031R2PG007
⚠	CEMENT RES. 5W K 1.2 Ω or	RW051R2DP005
⚠	CEMENT RESISTOR 5W K 1.2 Ω or	RW051R2PG001
⚠	CEMENT RESISTOR 5W J 1.2 Ω H:10MM or	RW051R2PAK10
⚠	CEMENT RESISTOR 3W K 1.2 Ω	RW031R2PAK10
R603⚠	METAL OXIDE FILM RES. 2W J 0.39 Ω or	RN02R39ZU001
⚠	METAL OXIDE FILM RES. 2W J 0.39 Ω	RN02R39DP004
R604⚠	CARBON RES. 1/4W J 1.5M Ω	RCX4JATZ0155
R605	CARBON RES. 1/4W J 1.2M Ω	RCX4JATZ0125
R606	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181
R607	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
R608	CARBON RES. 1/4W J 220k Ω	RCX4JATZ0224
R610	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R613	CARBON RES. 1/4W J 150 Ω	RCX4JATZ0151
R614	CARBON RES. 1/4W J 2.2k Ω	RCX4JATZ0222
R616	CARBON RES. 1/4W J 1 Ω	RCX4JATZ01R0
R617	CARBON RES. 1/4W J 180 Ω	RCX4JATZ0181

Ref. No.	Description	Part No.
R618	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R619	PCB JUMPER D0.6-P12.5	JW12.5T
R620	METAL OXIDE FILM RES. 2W J 10k Ω or	RN02103ZU001
	METAL OXIDE FILM RES. 2W J 10k Ω	RN02103DP004
R621⚠	CARBON RES. 1/4W J 12k Ω	RCX4JATZ0123
R622	CARBON RES. 1/4W J 12k Ω	RCX4JATZ0123
R623	CARBON RES. 1/4W J 33k Ω	RCX4JATZ0333
R624⚠	CARBON RES. 1/4W J 39k Ω	RCX4JATZ0393
R625⚠	CARBON RES. 1/4W J 39k Ω	RCX4JATZ0393
R629	CARBON RES. 1/4W J 13k Ω	RCX4JATZ0133
R630	CARBON RES. 1/4W J 13k Ω	RCX4JATZ0133
R631	CARBON RES. 1/4W J 13k Ω	RCX4JATZ0133
R632	CARBON RES. 1/4W J 680 Ω	RCX4JATZ0681
R633	CARBON RES. 1/4W J 5.6k Ω	RCX4JATZ0562
R634	CHIP RES.(1608) 1/10W J 6.8k Ω	RRXAJB5Z0682
R635	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R637	METAL OXIDE FILM RES. 2W J 10k Ω or	RN02103ZU001
	METAL OXIDE FILM RES. 2W J 10k Ω	RN02103DP004
R639⚠	CARBON RES. 1/2W J 1k Ω or	RCX2JZQZ0102
⚠	CARBON RES. 1/2W J 1k Ω	RCX2102KA013
R640	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R641	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R642	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJB5Z0822
R643	PCB JUMPER D0.6-P5.0	JW5.0T
R644	CHIP RES.(1608) 1/10W J 47k Ω	RRXAJB5Z0473
R645	CARBON RES. 1/4W J 5.6 Ω	RCX4JATZ05R6
R647	CARBON RES. 1/2W J 3.9 Ω or	RCX2JZQZ03R9
	CARBON RES. 1/2W J 3.9 Ω	RCX23R9KA013
R648	CARBON RES. 1/4W J 5.6 Ω	RCX4JATZ05R6
R650	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R651⚠	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R652⚠	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R653	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R654	CARBON RES. 1/4W J 2.2 Ω	RCX4JATZ02R2
R655⚠	CARBON RES. 1/4W J 2.2k Ω	RCX4JATZ0222
R656	CARBON RES. 1/4W J 8.2 Ω	RCX4JATZ08R2
R657	CARBON RES. 1/4W J 4.7 Ω	RCX4JATZ04R7
R659	CHIP RES.(1608) 1/10W J 100 Ω	RRXAJB5Z0101
R660	PCB JUMPER D0.6-P5.0	JW5.0T
R661	CARBON RES. 1/4W J 8.2 Ω	RCX4JATZ08R2
R662	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R665	CARBON RES. 1/4W J 5.6 Ω	RCX4JATZ05R6
R666	CARBON RES. 1/4W J 5.6 Ω	RCX4JATZ05R6
R667	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R670	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R701	CHIP RES.(1608) 1/10W J 75 Ω	RRXAJB5Z0750
R801⚠	METAL OXIDE FILM RES. 1W J 12 Ω or	RN01120ZU001
⚠	METAL OXIDE FILM RES. 1W J 12 Ω	RN01120DP003
R802	CARBON RES. 1/4W J 4.7k Ω	RCX4JATZ0472
R803	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R804	CHIP RES.(1608) 1/10W J 5.6k Ω	RRXAJB5Z0562
R805	CHIP RES.(1608) 1/10W J 10k Ω	RRXAJB5Z0103
R806	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R807	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R808	CARBON RES. 1/4W J 47k Ω	RCX4JATZ0473
R851	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R852	CHIP RES.(1608) 1/10W J 3.3k Ω	RRXAJB5Z0332
R853	CHIP RES.(1608) 1/10W J 2.2M Ω	RRXAJB5Z0225
R856	CARBON RES. 1/4W J 22k Ω	RCX4JATZ0223
R857	CHIP RES.(1608) 1/10W J 3.9k Ω	RRXAJB5Z0392
R862	PCB JUMPER D0.6-P5.0	JW5.0T
R863	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R864	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R865	CHIP RES.(1608) 1/10W J 8.2k Ω	RRXAJB5Z0822
R866	CHIP RES.(1608) 1/10W J 12k Ω	RRXAJB5Z0123
R867	CHIP RES.(1608) 1/10W J 270 Ω	RRXAJB5Z0271
R868	CHIP RES.(1608) 1/10W J 330k Ω	RRXAJB5Z0334
R871	CHIP RES.(1608) 1/10W J 1k Ω	RRXAJB5Z0102
R872	CHIP RES.(1608) 1/10W J 22k Ω	RRXAJB5Z0223
R873	CARBON RES. 1/4W J 18k Ω	RCX4JATZ0183
R874	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R875	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R876	CHIP RES.(1608) 1/10W J 2.2k Ω	RRXAJB5Z0222
R877	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R980	CARBON RES. 1/4W J 6.8k Ω	RCX4JATZ0682
R981	CARBON RES. 1/2W J 1.2 Ω	RCX2JZQZ01R2
	SWITCHES	
SW201	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW202	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW203	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW204	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW205	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW206	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW207	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW208	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW209	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW210	TACT SWITCH SKQNAED010 or	SST0101AL055
	TACTILE SWITCH KSHG612BT	SST0101HH027
SW211	LEAF SWITCH LSA-1142-2AU or	SSC0101KB014
	LEAF SWITCH MXS00052MPP0 or	SSC0101MCE01
	LEAF SWITCH MXS00981MPP0	SSC0101MCE02
SW212	ROTARY MODE SWITCH SSS-53MD	SSR0106KB003
	MISCELLANEOUS	
BC571	BEAD INDUCTORS FBA04HA600VB-00	LLBF00STU026
BC601	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC602	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC603	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC605	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
BC606	BEAD INDUCTORS FBR07HA121TB-00	LLBF00ZTU021
CF031	CERAMIC TRAP 4.5MHz or	FBE455PMR003
	4.5M TRAP XT4.5MB2 or	FBE455PLN001
	CERAMIC TRAP 4.5MHz	FBE455PMS002
CF032	CERAMIC FILTER SFSRA4M50CF00-B0 or	FBB455PMR004
	4.5M FILTER LTH4.5MCB	FBB455PLN001
CL201	FMN CONNECTOR, TOP 12P 12FMN-BTRK	JCFNG12JG002
CL301	LEAD WIRE WX3001A65512	WX3001A65512
CL602	LEAD WIRE WX3001A25505	WX3001A25505
F601⚠	FUSE 4.00A/125V or	PAGU20CAG402
⚠	FUSE 51MS040L or	PAFC20CHV402
⚠	FUSE STC4A125V U/CT or	PAGE20CW3402
⚠	FUSE 4.00A/125V	PAGG20CNG402
FH601	FUSE HOLDER MSF-015	XH01Z00LY001

Ref. No.	Description	Part No.
FH601⚠	FUSE HOLDER FH-V-03078	XH01Z00DK001
FH602	FUSE HOLDER MSF-015	XH01Z00LY001
FH602⚠	FUSE HOLDER FH-V-03078	XH01Z00DK001
J145	CHIP RES.(1608) 1/10W 0 Ω	RRXAZB5Z0000
JK701	RCA JACK(YELLOW) MSP-281V4-B or	JXRL010LY003
	RCA JACK 1P:YELLOW DA1-15A3N0S001	JXRL010RP026
JK702	RCA JACK(WHITE) MSP-281V1-B or	JXRL010LY005
	RCA JACK 1P:WHITE DA1-15A4N0S001	JXRL010RP025
JK801	EARPHONE JACK MSJ-035-12APC or	JYSL030LY001
	EARPHONE JACK HTJ-035-1ZEBTZ	JYSL030GE001
PS601⚠	THERMISTOR ZPB45BL7R0A	QNZZ45BL7R0A
RS201	REMOTE RECEIVER PIC-37042LU	USESJRSKK033
SA601⚠	SURGE ABSORBER 470V+-10PER	NVQZ10D471KB
⚠	SURGE ABSORBER CNR-10D471K	NVQZR10D471K
SF001	SAW FILTER SAFGM45M7VHHzC0B03	FBB456PMR008
SG001⚠	GAP. FNR-G3.10D	FAZ000LD6005
T571⚠	FLYBACK TRANSFORMER JF0501-3101B or	LTF00CPXB039
⚠	FLYBACK TRANS BSC23-2603S	LTF00CPS2054
T572	H0RIZONTAL DRIVE TRANS LP2-005	LTH00CPA5005
T601⚠	SWITCHING TRANS 01746 or	LTT00CPKT089
⚠	SWICHING TRANS CSA-SW0041	LTT00CPSA117
TB3	HEAD SHIELD(DC) T5400UA	0EM301721
TB7	LED HOLDER T5400UA	0EM407679
TB9	13VPOW HEAT SINK PHA T5400UA	0EM407602
TB21	BUSH, LED(F) H3700UD	0VM409508
TB26	13V H/V HEAT SINK PGZ T5400UA	0EM301720
TL2	SCREW, B-TIGHT M3X8 BIND HEAD+	GBMB3080
TP201	PCB JUMPER D0.6-P5.0	JW5.0T
TP202	PCB JUMPER D0.6-P25.0	JW25.0T
TP301	PCB JUMPER D0.6-P5.0	JW5.0T
TP302	PCB JUMPER D0.6-P5.0	JW5.0T
TP401	PCB JUMPER D0.6-P5.0	JW5.0T
TP402	PCB JUMPER D0.6-P5.0	JW5.0T
TU001⚠	TUNER B8135AP or	UTUNNTUSP023
⚠	TUNER ENV56DC9G3	UTUNNTUMS010
VR601⚠	CARBON P.O.T. 10k Ω B	VRCB103HH014
W601⚠	AC CORD PB8K9F9110A-057 or	WAC0172LW008
⚠	AC CORD WAC0172AS006 or	WAC0172AS006
⚠	AC CORD A0A0280-007	WAC0172LTE04
X201	X'TAL 32.768kHz(20PPM) or	FXC323LJNY01
	X'TAL 32.768kHz(20PPM) or	FXC323LCT001
	X'TAL 32.768kHz(20PPM) or	FXC323LDS002
	X'TAL 32.768kHz(20PPM) or	FXC323LQUA01
	X'TAL 32.768kHz(20PPM)	FXC323LCHE01
X202	X'TAL HC-49/U 10.6MHz or	FXD106LLN001
	X'TAL AT49-10.6	FXD106LDS002
X301	X'TAL 3.579545 MHz or	FXD355LLN003
	X'TAL 3.579545MHz(30PPM)	FXD355LCHE01
X401	X'TAL 3.579545MHz(20PPM) or	FXC355LLN003
	X'TAL 3.579545MHz(20PPM) or	FXC355LDS001
	X'TAL 3.579545MHz(20PPM)	FXC355LCHE01

CRT CBA

Ref. No.	Description	Part No.
	CRT CBA Consists of the following	----------
	CAPACITORS	
C501	CERAMIC CAP. B K 1000pF/2KV or	CCD3DKP0B102
	CERAMIC CAP. B K 1000pF/2KV or	CA3D102MR030
	CERAMIC CAP. B K 1000pF/2KV	CCD3DKD0B102
C502	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL1R0
	ELECTROLYTIC CAP. 1μF/50V M or	CE1JMASDL010
	ELECTROLYTIC CAP. 1μF/50V M	CE1JMASTL1R0
C511	CHIP CERAMIC CAP. B K 390pF/50V	CHD1JKB0B391
C521	CHIP CERAMIC CAP. B K 390pF/50V	CHD1JKB0B391
C531	CHIP CERAMIC CAP. B K 390pF/50V	CHD1JKB0B391
	CONNECTORS	
CN505	PIN CONNECTOR 005P-5100 or	JTEA001TG001
	CONNECTOR PIN, 1P LV or	1700576
	CONNECTOR PIN, 1P RT-01N-2.3A	1730688
	TRANSISTORS	
Q511	TRANSISTOR 2SC2482 TPE6 or	QQSZ02SC2482
	TRANSISTOR 2SC3468(E)-AE or	QQSE02SC3468
	TRANSISTOR 2SC3468(D)-AE or	QQSD02SC3468
	TRANSISTOR KTC3207	NQSZ0KTC3207
Q521	TRANSISTOR 2SC2482 TPE6 or	QQSZ02SC2482
	TRANSISTOR 2SC3468(E)-AE or	QQSE02SC3468
	TRANSISTOR 2SC3468(D)-AE or	QQSD02SC3468
	TRANSISTOR KTC3207	NQSZ0KTC3207
Q531	TRANSISTOR 2SC2482 TPE6 or	QQSZ02SC2482
	TRANSISTOR 2SC3468(E)-AE or	QQSE02SC3468
	TRANSISTOR 2SC3468(D)-AE or	QQSD02SC3468
	TRANSISTOR KTC3207	NQSZ0KTC3207
	RESISTORS	
R510⚠	METAL OXIDE FILM RES. 1W J 15k Ω or	RN01153ZU001
⚠	METAL OXIDE FILM RES. 1W J 15k Ω	RN01153DP003
R511	CHIP RES.(1608) 1/10W J 15 Ω	RRXAJB5Z0150
R512	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R513	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R515	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R516	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R517	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R520⚠	METAL OXIDE FILM RES. 1W J 15k Ω or	RN01153ZU001
⚠	METAL OXIDE FILM RES. 1W J 15k Ω	RN01153DP003
R521	CHIP RES.(1608) 1/10W J 15 Ω	RRXAJB5Z0150
R522	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R523	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R525	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R526	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R527	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R530⚠	METAL OXIDE FILM RES. 1W J 15k Ω or	RN01153ZU001
⚠	METAL OXIDE FILM RES. 1W J 15k Ω	RN01153DP003
R531	CHIP RES.(1608) 1/10W J 15 Ω	RRXAJB5Z0150
R532	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R533	CARBON RES. 1/4W J 56k Ω	RCX4JATZ0563
R535	CARBON RES. 1/4W J 560 Ω	RCX4JATZ0561
R536	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
R537	CARBON RES. 1/4W J 1.5k Ω	RCX4JATZ0152
	MISCELLANEOUS	
CL501A	LEAD WIRE 3P/300MM	WX1T5500-001
CL502A	LEAD WIRE 4P/300MM	WX1T5500-002
JK501⚠	CRT SOCKET ISMS02S	JSCC220PK003

SENSOR CBA

Ref. No.	Description	Part No.
	SENSOR CBA Consists of the following	0ESA06170
	TRANSISTORS	
Q201	PHOTO TRANSISTOR MID-32A22F or	NPWZ1D32A22F

Ref. No.	Description	Part No.
	PHOTO TRANSISTOR PT204-6B-12	NPWZT2046B12
Q202	PHOTO TRANSISTOR MID-32A22F or	NPWZ1D32A22F
	PHOTO TRANSISTOR PT204-6B-12	NPWZT2046B12

SUPPLEMENT

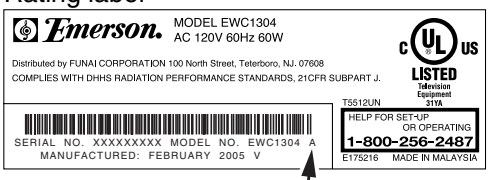
Emerson® SYLVANIA

SERVICE MANUAL

Subject: Change of IC

This service manual supplement is for the EWC1304/6313CE changed IC model, which are different from previous EWC1304/6313CE model. For EWC1304/6313CE changed IC model, an "A" has been added to the end of the model number on rating label in the rear. Refer to the rating label illustration at right.

Rating label

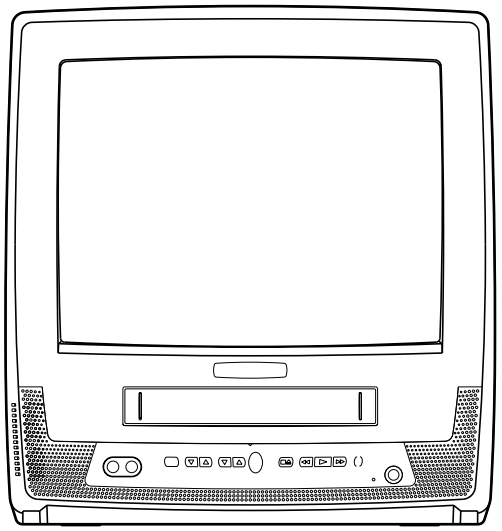


Suffix "A"

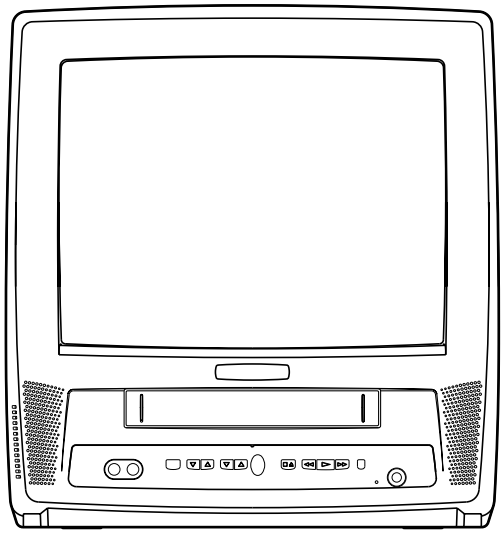
This service manual shows only the differences between the model EWC1304/6313CE changed IC model and the previous EWC1304/6313CE model. All other information is described in the service manual of the previous EWC1304/6313CE model. When servicing the deck mechanism, refer to MK14 Deck Mechanism Section (Deck Mechanism Part No.: N2426FT)

13″ COLOR TV/VCR COMBINATION

EWC1304



6313CE



EWC1304 changed IC model

Different parts from previous version model (EWC1304)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A1X	FRONT CABINET ASSEMBLY T5512UN	1EM120132
A1-2	CONTROL PLATE T5512UN	1EM320195
A2	REAR CABINET T5402UC	0EM101289
A3⚠	RATING LABEL T5512UN	----------
1B1	DECK ASSEMBLY CZD014/VM2426	N2426FT
S1	CARTON T5512UN	1EM420743
S4	SERIAL NO. LABEL T5512UN	----------
X2⚠	OWNER'S MANUAL T5512UN	1EMN20213
ELECTRICAL PARTS		
	MMA CBA	1ESA10553
	MAIN CBA	----------
C601⚠	METALLIZED FILM CAP. 0.22μF/250V	CT2E224MS037
C605⚠	METALLIZED FILM CAP. 0.22μF/250V	CT2E224MS037
IC001	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
IC201	MICRO COMPUTER(PB FREE) M37762M8A-8D4GP UU	QSZAB0RHT013
IC301	VCD IC M61275FP-TF3H	QSZAD0RMB133
R038	CHIP RES.(1608) 1/10W J 200 Ω	RRXAJB5Z0201
R039	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R081	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R241	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJB5Z0472
PS601	Not Used	
PS602⚠	THERMISTOR ZPB45BL7R0A	QNZZ45BL7R0A
SF001	SAW FILTER SAFHM45M7VAAZ00B03	FBB456PMR010
TU001⚠	TUNER UNIT TEQH9-001A	UTUNNTUAL032

6313CE changed IC model

Different parts from previous version model (6313CE)

Ref. No.	Description	Part No.
MECHANICAL PARTS		
A1X	FRONT CABINET ASSEMBLY T5514UQ	1EM120130
A1-2	CONTROL PLATE T5514UQ	1EM320193
A2	REAR CABINET T5402UC	0EM101289
A3⚠	RATING LABEL T5514UQ	----------
1B1	DECK ASSEMBLY CZD014/VM2426	N2426FT
S1	CARTON T5514UQ	1EM420749
S4	SERIAL NO. LABEL T5514UQ	----------
X2⚠	OWNER'S MANUAL T5514UQ	1EMN20215
ELECTRICAL PARTS		
	MMA CBA	1ESA10553
	MAIN CBA	----------
C601	METALLIZED FILM CAP. 0.22μF/250V	CT2E224MS037
C605⚠	METALLIZED FILM CAP. 0.22μF/250V	CT2E224MS037
IC001	IC:VIF/SIF M61113FP TF0G	QSZBA0SHT035
IC201	MICRO COMPUTER(PB FREE) M37762M8A-8D4GP UU	QSZAB0RHT013
IC301	VCD IC M61275FP-TF3H	QSZAD0RMB133
R038	CHIP RES.(1608) 1/10W J 200 Ω	RRXAJB5Z0201
R039	CARBON RES. 1/4W J 1k Ω	RCX4JATZ0102
R081	CARBON RES. 1/4W J 100k Ω	RCX4JATZ0104
R241	CHIP RES.(1608) 1/10W J 4.7k Ω	RRXAJB5Z0472
PS601	Not Used	
PS602⚠	THERMISTOR ZPB45BL7R0A	QNZZ45BL7R0A
SF001	SAW FILTER SAFHM45M7VAAZ00B03	FBB456PMR010
TU001⚠	TUNER UNIT TEQH9-001A	UTUNNTUAL032